

# A Prominent Figure in the Creation of the Suez Canal: Luigi Negrelli (1799-1858)

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## ABSTRACT

The essential role of Luigi Negrelli (1799-1858) in planning the Suez Canal project – then realised by tens of thousands of Egyptian and European workers with the commitment of the *Compagnie universelle du canal maritime de Suez* headed by Ferdinand de Lesseps – was perfectly clear when the work was completed 150 years ago. In the years that followed, however, Negrelli fell into oblivion and his figure was not revisited until the first half of the 20<sup>th</sup> century, and then in a series of markedly nationalistic studies that misrepresented his image and role. During the interwar period, on the wave of claims to national grandeur, Negrelli was depicted as an “Italian genius” at the service of *Risorgimento* ideals that he actually had no part of. Meanwhile some German writings, driven by the same nationalistic demagogy, likewise improperly claimed a distinctly German origin for him. Even some recent studies in European cultural publications have been imprecise and totally inadequate in depicting the man and his role. Drawing on abundant, previously unexploited documents produced by Negrelli himself, this paper offers a new interpretation of the role of this eminent engineer. It traces his engagement in the realisation of a series of railways in Europe and his fundamental role in the design of the Suez Canal, identifying him as a distinguished economist and technician of transportation.

## 1. Introduction

Inaugurated with well-deserved fanfare 150 years ago, the

Suez Canal was constructed by the *Compagnie Universelle du Canal Maritime de Suez* headed by Ferdinand de Lesseps.<sup>1</sup> At that time, eleven years after his death, Luigi Negrelli was still one of the most illustrious figures in European engineering. His role in preparing the design of the canal and in finding the resources with which to construct it at international level was extremely clear both in the engineering community and in the political-diplomatic system. Subsequently, however, owing to Negrelli's premature death and his resulting absence during the construction phase of this historic project, his figure was progressively eclipsed. Instead, the undisputed protagonist was Ferdinand de Lesseps, who had been able to overcome numerous obstacles and complete the work,<sup>2</sup> while Negrelli gradually fell into oblivion.

His work and in particular his contribution to the Suez enterprise were revisited only in the twentieth century, when a handful of studies conducted with methodological rigour fully recovered his role.<sup>3</sup> Alongside these works, however, a large body of literature marred by markedly nationalistic, ideological approaches misrepresented his image and role.

During the interwar period, scientific publications and government propaganda alike described Negrelli as an "Italian genius." Even some methodologically rigorous studies succumbed to this bias, forcing the concept of nationality on Negrelli with no regard

<sup>1</sup> D.A. Farnie, *East and west of Suez. The Suez Canal in history 1854-1956*, London, 1969.

<sup>2</sup> On de Lesseps see: G. Barnett Smith, *The life and enterprises of Ferdinand de Lesseps*, London, 1895; H.J. Schonfield, *Ferdinand de Lesseps*, London, 1937; G. Edgar Bonnet, *Ferdinand de Lesseps: Le Diplomate, le Créateur de Suez*, Paris, 1951; C. Beatty, *Ferdinand de Lesseps: a biographical Study*, London, 1956; J. Pudney, *The Lesseps' Canal*, London, 1969, pp. 34-36; Z.O. Algardi, "La intramontabile Compagnia di Suez: magia dei nomi", in *Belfagor*, vol. 46, n. 4, 1991, pp. 441-448; G. de Diesbach, *Ferdinand de Lesseps*, Paris, 1998; A. Giuntini, *Le meraviglie del mondo. Il Sistema internazionale delle comunicazioni nell'Ottocento*, Prato, 2011, pp. 109-137.

<sup>3</sup> The most thoroughly documented biography of Negrelli is A. Birk, *Alois von Negrelli. Die Lebensgeschichte eines Ingenieurs*, vol. I: *In der Heimat, in der Schweiz, in Österreich*, Vienna-Leipzig, 1915; vol. II: *Der Suez Kanal. Letzte Kämpfe*, Vienna-Leipzig, 1925. See also: A. Birk, K.H. Müller, *Der Suezkanal: seine Geschichte und seine wirtschaftliche Bedeutung für Europa, Indien und Ägypten*, Hamburg, 1925.

for the historical and cultural context in which this concept had gradually taken shape. They thus painted a completely misleading portrait.<sup>4</sup> This also applies to some similar nationalistic Austrian literature, which claimed that Negrelli had a distinctly German heritage.<sup>5</sup> This attitude persisted even into the second half of the century, when the disastrous outcome of extremist nationalism might have been expected to enable biographers to carry out their research in a climate free of ideological preconceptions. Yet many post-war studies on Negrelli fail to use the ample documentation that he himself produced,<sup>6</sup> relying instead on misleading analyses

<sup>4</sup> Examples of works that describe Negrelli as Italian include: M. Baratta, *Luigi Negrelli e il canale di Suez*, Pavia, 1925; G. Adami, *Luigi Negrelli ingegnere*, Trento, 1929; Id., *Il Canale di Suez e l'ingegnere Negrelli*, Trento, 1937; Id., "Per 'L'italianità di Luigi Negrelli'" in *Quaderno della rivista Trentino*, n. 10, 1940; Id., "Tardive rivendicazioni tedesche sull'ingegnere Luigi Negrelli", in *Studi trentini di scienze naturali*, a. XXI, 1941, pp. 1-12; Id., "Glorie contese. Luigi Negrelli e il Taglio dell'Istmo di Suez", in *Rivista di cultura*, La Sorgente di Rovigo, III, 1949, n. 8; A. Levi Cases, "Luigi Negrelli e il progetto definitivo del canale di Suez," in *L'ingegnere*, vol. IV, n. 10, 1930; A. Sammarco, *Luigi de Negrelli, la mirabile vita del creatore del Canale di Suez*, Rome, 1937; Id., *Suez, storia e problemi, secondo documenti inediti egiziani ed europei*, Milan, 1943; A. Monti, *Il Canale di Suez e le rivendicazioni italiane*, Rome, 1940; E. Bordignon, *Luigi Negrelli: Suez*, Venice, 1941. The latter translates entire sections of Birk's works without citing the source.

<sup>5</sup> W. Tschuppik, "Ein österreichischer Ingenieur", in *Blätter für Bücherfunde*, June 1915, pp. 6-9; N. Negrelli von Moldelbe, *Die Lüge von Suez. Der Lebenskampf des deutschen Ingenieurs Alois von Negrelli*, Berlin, 1940; P. Herre, "Negrelli, der Österreicher", in *Südtiroler Almanach*, Innsbruck, 1949. V. Schützenhofer, "Alois Negrelli, sein Leben und sein Werk", in *Blätter für Technikgeschichte*, Heft IX, 1949, pp. 35-54.

<sup>6</sup> The following works are at least partly based on primary sources: F.A. Scaglione (ed.), *Luigi Negrelli e il Canale di Suez nelle carte del Fondo Maria Grois Negrelli*, Rome, vol. I, 1971, vol. II, 1972; the essays in the volume: A. Leonardi (ed.), *Luigi Negrelli ingegnere e il canale di Suez*, Trento, 1990; C.F. Deihsen, *Alois Negrelli Ritter von Moldelbe, ein Österreichischer Eisenbahnpionier des 19. Jahrhunderts. Seine Leistungen und Verdienste um die Entwicklung des Eisenbahnwesens im Österreichischen Kaisertum und in der Schweiz bis 1858*, Vienna, 1993; P. Bussjäger, J. Concin, K. Gerstgrasser, *Alois Negrelli und seine Spuren in Vorarlberg (1822-1832). Eine regionalhistorische und verwaltungsgeschichtliche Untersuchung*, Bludenz, 1997; M.B. Marzani Prosser, *Luigi Negrelli, un anno di vita. Tagebuch auf das Jahr 1831 - Diario dell'anno 1831*, Trento, 1999; T. Gatani, *Luigi Negrelli ingegnere trentino ed europeo*, Messina, 2000; Id. "Luigi (Alois) Negrelli ingegnere ferroviario", in *Civis*, vol. 29, 2005, n. 87, pp.139-184. See also: A. Leonardi, "Dall'Europa a Suez; il ruolo di Luigi Negrelli (Primoiero 1799-Vienna 1858) nella promozione delle comunicazioni internazionali", in G. Romanato (ed.), *Giovanni Miani e il contributo Veneto alla conoscenza dell'Africa. Esploratori, missionari, imprenditori, scienziati, avventurieri, giornalisti*, Rovigo,

that failed to take first-hand sources into account and thus further distorted his image.<sup>7</sup> Very few works have succeeded in framing Negrelli's role within the European context of the Habsburg monarchy in which he operated.<sup>8</sup> Even some very recent European studies are off the mark, imprecise and totally inadequate to the task of depicting Negrelli and his role.<sup>9</sup>

The paper is based on 1,597 documents constituting the main corpus of the Negrelli *Nachlaß*, a collection consisting of a total of 2,435 documents of various kinds conserved in the Technisches Mu-

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2006; Id., "Luigi Negrelli: un protagonista del take off ferroviario in area mitteleuropea", in *Histoire des Alpes - Storia delle Alpi - Geschichte der Alpen*, 2016, 21, pp. 195-214.

<sup>7</sup> Both Italian and German works fall into this group: *Il Congresso di Trento per il centenario del progetto italiano per il taglio dell'Istmo di Suez (1855-1955): relazioni e resoconti*, Rome, 1956; *Atti del Convegno culturale degli istituti nautici, in occasione del centenario dell'adozione da parte della Commissione internazionale del progetto dell'ing. Negrelli per il taglio dell'istmo di Suez: Montecatini Terme, 22-25 aprile 1956*, Naples, 1959; A. Orsingher, *A ricordo di Luigi Negrelli*, Feltre, 1964; B.V. Vecchi, *Il conte Luigi de' Negrelli: nel centenario del canale di Suez: 17 novembre 1869*, Milan, 1969; G. Adami, Z.O. Algardi, U. Corsini, V. Zignoli, *Luigi Negrelli il Canale di Suez: 1869-1969*, Trento, 1969; *Luigi Negrelli nel centenario del Canale di Suez: 1869 novembre 1969*, Milan, 1970; W.P. Kirsch, *Negrelli. Der Schöpfer des Suez-Kanals, Ein Genie, seine Zeit, sein Leben und sein Wirken*, Vienna, 1971; J. Dultinger, *Alois Negrelli Ritter von Moldelbe. Das Schicksal eines grossen Südtirolers*, Innsbruck, 1993; N. Hölzl, *Alois Negrelli - Österreichs bedeutendster Eisenbahner und Schöpfer des Suezkanals*, Vienna, 1994. The important study by Z.O. Algardi [*Luigi Negrelli, l'Europa, il canale di Suez*, Florence, 1988] is noteworthy for its meticulous reconstruction of the question of Negrelli's authorship of the final canal project. However, while aiming to represent Negrelli as a true European spirit, the author persistently lapses into trite nationalistic clichés, ultimately asserting his Italianness. Following Algardi's participation in the international conference held in Primiero in 1988, she made some adjustments, coming to call Negrelli "Italian-Austrian". Id. "La figura di Luigi Negrelli uomo e scienziato," in A. Leonardi (ed.), *Luigi Negrelli ingegnere*, pp. 63-79.

<sup>8</sup> These include the aforementioned works by Deihsen, Gatani and Leonardi, as well as some important contributions by S. Bono, "Luigi Negrelli e il Canale di Suez", in *Africa: Rivista Trimestrale di studi e documentazioni dell'Istituto italiano per l'Africa e l'Oriente*, 43, n. 4, pp. 645-652; Id., "Il Canale di Suez e l'Italia", in *Mediterranea - Ricerche Storiche*, III, December 2006, pp. 411-422; H. Helps, "Luigi Negrelli, Engineer 1799-1858: Planner of the Suez Canal", in *Transactions Newcomen Society*, LXXV, 2005, pp. 317-339.

<sup>9</sup> See: C. Piquet, *La Compagnie du Canal de Suez. Une concession française en Egypte (1888-1956)*, Paris, 2008, pp. 256, 389, *passim*, which is imprecise and erroneous on Negrelli. Id., *Le canal de Suez. Une voie maritime pour l'Egypte et le monde*, Paris, 2018, p. 219. Other recent works completely ignore Negrelli's role: M.A. Moghira, *L'isthme de Suez: passage millénaire, 640-2000*, Paris, 2002; H. Bonin, *History of the Suez Canal Company, 1858-1960: between controversy and utility*, Geneva, 2010.

seum of Vienna, and which a research group at the Department of Economics and Management of the University of Trento has made a regular source of study.<sup>10</sup> The project seeks to document Luigi Negrelli's role in the construction of several railway lines in Central Europe and in the planning of the Suez Canal and to definitively refute the anachronistic and fallacious traits ascribed to him, even by some of today's media.<sup>11</sup>

To draw an accurate portrait of Negrelli the man and eminent scientist and to describe the context in which he lived and worked, the proper starting point is the documentation that he himself produced. This contribution is intended to revise the standard account of Luigi Negrelli and his role in the Suez Canal project drawing mostly on primary sources, namely his own writings, be they public

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<sup>10</sup> The *Nachlaß* Negrelli in the Archive of the Technisches Museum in Vienna contains 1,597 documents including letters by and to Negrelli, a series of reports, service dispatches and notes of various kinds dated 1815-1858, plus another 838 documents. Luigi's daughter Maria and the biographer Alfred Birk collected the latter documents with the intention of establishing Negrelli's authorship of the Suez Canal project in court. Carla Camilleri and Pietro Tedesco brought them to light in the course of research coordinated by Andrea Leonardi. Maria Negrelli gave a copy of a portion of this documentation, consisting of 509 documents, to the Italian Legation in 1932, which was then transferred to the Ministry of Foreign Affairs in Rome and published between 1971 and 1972 along with other documents that Maria gave directly to the Italian Legation (F.A. Scaglione (ed.), *Luigi Negrelli e il Canale di Suez*). With the sole exceptions of Sammarco and Bordignon, the few Italian scholars who have approached the subject of Negrelli's life through his papers have never used any other first-hand documentary sources. Scaglione's introduction states that of the 509 documents published, many of which are posthumous copies, only a few are by Negrelli. Andrea Leonardi has coordinated the inventory and scanning work on the whole *Nachlaß*. Copies of all the materials are conserved at the Luigi Negrelli Documentation Centre in Primiero (also available online - <https://negrelli.primiero.tn.it/it/archives/index/>) and at the Department of Economics and Management of the University of Trento. 70% of the archival units are in German. Negrelli used the Gothic *Kurrentschrift* in the drafting of office reports, in most of his correspondence, and in his diaries, where he occasionally inserted some phrases in Italian. 19% of the documents are in French, the language that Negrelli used in letters to his French and international correspondents; 9% are in Italian and concern some letters to and from his relatives in Primiero and the correspondence with the Lombardo-Venetian Kingdom and Trieste; the remaining 2% are in English and occasionally other languages.

<sup>11</sup> The "Italian" Negrelli of most websites is a prime example of this.

or private. The archival research and documental analysis carried out to date have scrutinised various aspects of Negrelli's life and work, lifting the veil of privacy in which he was long shrouded and revealing a personality that was particularly rich, dynamic and open to new ideas.<sup>12</sup>

## 2. Negrelli's education and early projects

Luigi Negrelli was born on 23 January 1799 in Primiero, which had been part of the Habsburg domains since the 14<sup>th</sup> century.<sup>13</sup> He grew up in a family dominated by the presence of his father, Angelo Michele, one of whose daughters – Luigi's sister, who had collected his memoirs – described him as "of sanguine temperament, melancholic, closed, endowed with penetrating intellect, with an immense memory and with a precipitous, firm will." As a man of the early nineteenth century, Negrelli cultivated, with moral rectitude, some solid principles expressed in watchwords that he made his own: *God, neighbour, Church, Austrian sovereign legitimacy*.<sup>14</sup> He was also influenced by his mother Elisabeth Württemberg, whom her daughter described as: "religious without ostentation, devoted to her husband, to her children, hidden and modestly charitable, infinitely patient, of few words, blithe, peaceful."<sup>15</sup> Luigi Negrelli was brought up under the stimulus of both parents, as his mother Elisabeth noted in her diary: "*Deutsch ist deine Muttersprache, welsch des Vaters Art*

<sup>12</sup> See: A. Leonardi (ed), *Luigi Negrelli ingegnere*; Id., *Dall'Europa a Suez*. Id., *Luigi Negrelli: un protagonista del take off ferroviario*; C.F. Deihsen, *Alois Negrelli Ritter von Moldelbe*; T. Gatani, *Luigi Negrelli ingegnere trentino ed europeo*.

<sup>13</sup> A series of autobiographical documents in the *Nachlaß* have settled the controversy over Negrelli's date of birth. See: "Curriculum" in Technisches Museum Wien - henceforth TMW - *Nachlaß* Negrelli, M 9-10, Dienst Tabelle; there, 05\_0198, Dienst Tabelle, 07.01.1843.

<sup>14</sup> TMW, *Nachlaß* Negrelli, 10\_0951-000, p. 18. The diary was published by Ugo Pistoia: A.M. Negrelli, *Memorie che servono alla storia della sua vita ed in parte a quella de' suoi tempi, scritte da lui medesimo, con difficoltà per l'abbreviata sua vista, negli ultimi anni del suo vivere*, edited by U. Pistoia, Feltre, 2010.

<sup>15</sup> TMW, *Nachlaß* Negrelli, 10\_0951-000, p. 19.

*und Blut, Herrlich sich in dir entfalte was in beiden Völkern ruth.*<sup>16</sup> The unquestioned loyalty to the Habsburg monarchy and love for the sovereign that distinguished his father – as evidenced by letters that Luigi received from him during the stormy events of 1848<sup>17</sup> – certainly influenced the absolute devotion that Luigi Negrelli always had for the established authority of his country: the Habsburg Monarchy.<sup>18</sup>

The conservatism of his family did not prevent Negrelli from displaying, early on, receptiveness to supranational ideas, albeit with the constant intent to be of service to his Austrian “fatherland,” as he called it more than once. These two features emerge from his correspondence, in particular his private and thus more sincere letters. We can find it in several letters to his Swiss friend Martin Escher and especially in the numerous letters to his second wife Karoline. They testify to his unshakable Habsburg faith and absolute loyalty to the emperor. To Karoline – his beloved ‘Lotti’ – on 11 December 1854, Negrelli emphasised that, whatever the future might hold, he would always be an authentic Austrian, a loyal servant of the emperor.<sup>19</sup> At the same time, his letters also express his cosmopolitan ideas, advocating contact and cooperation among peoples, including profoundly different ones. This is the backdrop to Negrelli’s interest in the Suez Canal project.

Significant in this regard was a letter to Escher on 30 December

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<sup>16</sup> “Your mother tongue is German, your father’s race and blood are Italian, in you there develops in a wonderful way what qualifies both peoples”: I. Nemeth, “Luigi Negrelli und sein geistiges Vermächtnis”, in A. Leonardi (ed.), *Luigi Negrelli ingegnere*, p. 109.

<sup>17</sup> A letter to Luigi Negrelli on 24 April 1848 is emblematic in this regard. It demonstrates not only love of the sovereign but also pride at belonging to the Habsburg Monarchy and contempt for the Italian “rebels” (TMW, *Nachlaß* Negrelli, 8\_606\_001).

<sup>18</sup> Austria, that is to say, and not – as is mistakenly said in numerous biographical reconstructions – Austria-Hungary, which was created only in 1867 following the “Ausgleich.”

<sup>19</sup> “Was immer die Zukunft bringen mag, erfülle ich in der Gegenwart meine Pflicht als treuer Diener des Kaisers der eifriger Österreicher, unbekümmert, was eben jene Zeit bringen wird” (Whatever the future may hold, in the present I am fulfilling my duty as a faithful servant of the Emperor and loyal Austrian, regardless of what that time will bring). TMW, *Nachlaß* Negrelli, 11\_1112\_000, 11.12.1854.

1854, in which Negrelli confided his intention to conclude his career by completing the work to which he had been dedicating himself for many years: the cutting of the isthmus of Suez to create a shipping channel between the Mediterranean and the Red Sea. *“Mit Suez hat es wieder einen Schritt vorwärts gemacht – denn die an Herrn de Lesseps erteilte Konzession für den Suez Canal list auf Rechnung unser alten Societe d’Etudes erfolgt. Wir wollen sehen was die Zukunft bringen wird und jedenfalls wäre es für mich eine große Befriedigung wenn ich meine Laufbahn an diesem großen Werk schließen könnte.”*<sup>20</sup> It was precisely this work that, in his declared intentions as a planner, would build important new relations between peoples.

After primary school in Primiero, Luigi Negrelli attended the diocesan high school in the nearby city of Feltre, which after the fall of the Republic of Venice and the end of the Napoleonic wars had become part of the Kingdom of Lombardy-Venetia, now subject to Habsburg rule as the Tyrol had been for centuries. After secondary school Negrelli returned to the Tyrolean area, and his family sent him to Innsbruck, with a twofold objective: to master the German language – which in fact would become his usual language – and above all to complete his theoretical and practical studies in engineering. In a *curriculum vitae*, compiled in October 1856, Negrelli wrote: *“Meine Studien habe ich in Italien und zum Theil in Innsbruck vollzogen, wo ich als k.k. Practicant bei der dortigen Provinz-Baudirection im Jahre 1819 beeedet worden bin. In der Eigenschaft als Ingenieur Practicant habe ich in allen größeren Bauherstellungen in Tirol, nehmlich am Bau der Ampezzaner, und der Arlbergstraße, und vieler anderen wichtigen Straßen-Correctionen, und Flußregulierungen in leitender Stellung in jenem Lande Antheil genommen.”*<sup>21</sup>

<sup>20</sup> “As to Suez, another step forward has been taken - the concession for the Suez Canal list to Mr. de Lesseps has been made on behalf of our old Société d’Etudes. We want to see what the future will bring and, in any case, it would give me great satisfaction if I could close my career with this great work” (TMW, *Nachlaß* Negrelli, 11\_1118\_000).

<sup>21</sup> “I completed my studies in Italy and partly in Innsbruck, where I graduated as k.k. Practicant at the local provincial building authorities there in 1819. In my capacity as practitioner engineer, I took a leading position in all major building projects in Tyrol,

At that time, only three universities were active in Austria: the k.k. Polytechnisches Institut für Wien, the Akademie der bildenden Künste in Vienna and the Technische Universität Graz, which provided theoretical training for aspiring engineers and architects. Usually those intending to enter the engineering profession, rather than attend the courses at these universities, followed a training programme that included mathematics and physics, but above all a multi-year apprenticeship. At this stage, the future engineer was assisted by an experienced engineer who accompanied him on a series of design projects in the field. The engineer who trained Negrelli was Joseph Duile, responsible for public works in the Tyrol and Vorarlberg, known for having developed a model for harnessing mountain streams.<sup>22</sup> Once this process was completed, the candidate took an examination to demonstrate his calculus and design capacity and be authorised to practice the profession.<sup>23</sup> So Negrelli did not receive an academic education in the modern sense of the term, and he certainly did not attend some supposed Innsbruck Polytechnic, as many authors have alleged, because none ever existed.<sup>24</sup>

Negrelli passed the state examination in Innsbruck in October 1820, becoming a qualified *Zivilingenieur* and joining the Imperial

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in particular in the construction of the Ampezzo and Arlberg roads, and many other important road corrections and river controls in that region" *Eigenhändiger Lebenslauf Alois Negrellis. Verona, 4. Oktober 1856*, Wiener Stadt- und Landesbibliothek, Handschriftensammlung, Nr. 25593.

<sup>22</sup> J. Duile, *Ueber Verbauung der Wildbäche in Gebirgs-Ländern, vorzüglich in der Provinz Tirol, und Vorarlberg; zum Gebrauche für Bau- und Forstbeamte, Obrigkeiten, Seelsorger, und Gemeinds-Vorstände*, Innsbruck, 1826. Information on Negrelli's training and his successful meeting with Duile is provided by Negrelli himself in an autobiographical profile written for the "Appenzellisches Monatsblatt", February 1837, Nr. 2, pp. 33-36. This text was translated into Italian by T. Gatani, *Luigi Negrelli ingegnere*, pp. 41-44.

<sup>23</sup> A. Birk, *Alois von Negrelli*, vol. I, pp. 7-9; C.F. Deihsen, *Alois Negrelli Ritter von Moldelbe*, pp. 17-20; M.B. Marzani, "Sei lettere inedite di Luigi Negrelli a Pietro Ferdinando Marzani," in *Archivio trentino di storia contemporanea*, vol. 42, n. 2, pp. 5-24.

<sup>24</sup> The "invention" of the Innsbruck Polytechnic has found its way into almost every Italian biography of Negrelli, but it is also proposed in works in German. Among the recent works that report on the non-existent polytechnic, see: Z.O. Algardi, *Luigi Negrelli, l'Europa*, p. 7; H. Held, *Die Baugeschichte der Brennerbahn 1836-1867*, Innsbruck, 2018, p. 104.

Austrian Civil Service.<sup>25</sup> From 1821 to 1824 he worked in several Tyrolean valleys, following road and waterway control works.<sup>26</sup> In 1824 the Landesbaudirektion für Tirol und Vorarlberg sent him to Vienna, where he was able, among other things, to investigate new technologies using iron for bridges. During the months of his stay in Vienna he also met some important designers who worked in Central Europe.<sup>27</sup>

In the year after his return to Tyrol, Negrelli was given responsibility for a series of hydrographic studies and was able to deal with control of the Rhine in the stretch where the river marks the border between Vorarlberg and Switzerland.<sup>28</sup> His planning skills, his commitment to management of the works, and the effectiveness of his actions soon became known beyond the borders of the Habsburg Monarchy, and he was invited to work in Switzerland.<sup>29</sup> In 1832, among the various proposals addressed to him, he accepted that of the Canton of St. Gallen as inspector of road and hydraulic works. In 1835 he moved to Zurich, where he worked as chief engineer for the Kaufmannschaft until 1839, planning and supervising the construction of numerous roads, bridges – including some artefacts considered to be of great architectural value, such as the Münsterbrücke over the Limmat in Zurich – and various hydraulic arrangements. In 1839 he became federal commissioner for the cantons of Uri, Ticino and Valais, with the specific task of dealing with the arrangement of catchment areas and remedying the damage caused in various valleys by flooding.<sup>30</sup>

<sup>25</sup> TMW, *Nachlaß* Negrelli, 05\_0198\_000, Dienst Tabelle, 07.01.1843.

<sup>26</sup> C.F. Deihsen, *Alois Negrelli Ritter von Moldelbe*, p. 21.

<sup>27</sup> Alfred Birk reports that in Vienna Negrelli came into contact with the illustrious hydraulic engineer Josef Maria Schemerl von Leytenbach and a young engineer from the Polytechnikum in Prague, Franz Anton von Gerstner, who was particularly active in railway design and was to become professor of geometry and topography at the Polytechnisches Institut in Vienna (A. Birk, *Alois von Negrelli*, vol. I, pp. 50-55).

<sup>28</sup> M.B. Marzani Prosser, *Luigi Negrelli, Un anno di vita*, pp. 13-16; P. Bussjäger, J. Concin, K. Gerstgrasser, *Alois Negrelli*, pp. 33-183.

<sup>29</sup> A. Birk, *Alois von Negrelli*, vol. I, pp. 72-81.

<sup>30</sup> P. Bussjäger, J. Concin, K. Gerstgrasser, *Alois Negrelli*, pp. 75-84; T. Gatani, *Luigi Negrelli ingegnere trentino ed europeo*, pp. 87-127.

### 3. The interest in railways

It was during his Swiss period that Negrelli developed his approach to railway technology, following an assignment from the cantonal authorities and the Handelskammer of Zurich to study, together with Eng. Johannes Eschmann, the route of a railway line between Zurich and Basel.<sup>31</sup> The work – not only surveying but also evaluation of the possible alternatives for a functional, effective and economically sustainable route – proved to be particularly scrupulous, as can be seen from the report that Negrelli and Eschmann presented on 14 June 1836 at the Handelskammer in Zurich.<sup>32</sup> This first project already made explicit the care with which Negrelli analysed not only the specific engineering content but also the economic and organisational aspects of the project, on the assumption that the actual usefulness and importance of the railway track also depended, and to a considerable extent, on these latter features.<sup>33</sup> The report unequivocally shows the great importance that he assigned to the new means of communication. At the time, however, there was still some doubt about the right technology for this innovative vehicle, in particular the most suitable traction for the fast, efficient, economical operation of railway trains.

In fact, European and North American planners had not yet fully resolved the dilemma between mechanical and animal traction.<sup>34</sup> In

<sup>31</sup> M. Brugger, *Zürcherische Eisenbahnpolitik*, Zürich, 1909, pp. 27-28.

<sup>32</sup> *Bericht der Ingenieure Negrelli und Eschmann über die erfolgte Untersuchung der Lage von Zürich bis Chatel zum Behufe der Anlegung einer neuen Eisenbahn* (TMW, Nachlaß Negrelli, 02\_0036, 14 June 1836).

<sup>33</sup> See in this regard the remarks of R. Contro, "I progetti di Luigi Negrelli in campo ferroviario", in A. Leonardi (ed.), *Luigi Negrelli ingegnere*, pp. 371-390 and G. Borruso, *L'importanza economica delle linee ferroviarie progettate da Negrelli nel processo di sviluppo del trasporto su ferrovia in Europa nel XIX secolo*, ivi, pp. 391-433.

<sup>34</sup> P. O' Brien, *Railways and the Economic Development of Western Europe 1830-1914*, New York, 1983; T.R. Gourvish, "Railways 1830-70: the formative Years," in M.J. Freeman, D.H. Aldcroft (eds.), *Transport in Victorian Britain*, Manchester, 1988, pp. 57-90; A. Giuntini, "Il boom delle ferrovie," in V. Castronovo (ed.), *Storia dell'economia mondiale*, 4, *Tra espansione e recessione. Dalla seconda metà dell'Ottocento agli anni Trenta*, Rome-Bari, 1999, pp. 21-43; J. Simmons, *The Railway in Town and Country, 1830-1914*, London, 2008.

1825 the first section of the Linz-Budweis line, the first railway on the European continent designed and built for animal traction, came into operation. At that time it was still a standard reference point compared to the still modest stretches that involved mechanical traction using steam locomotives.<sup>35</sup>

To resolve a series of doubts concerning the relative effectiveness of mechanical traction, in 1836 Negrelli made a study trip to areas where railways were already tangible. In August he travelled to France, Britain and Belgium to gain first-hand experience of railways and talk with the designers and builders of the first European lines.<sup>36</sup> In 1838, in Frauenfeld, he published a book on this experience, the most sizeable of his printed works, which made it clear that his main interest in the journey was not in railway theory as such, with which he was evidently familiar, but in the myriad implications that accompanied railway construction.<sup>37</sup>

He was impressed by the technology of the British and Belgian railway lines but quite unconvinced by the steam coaches, the so-called Strassen-Dampfwagen, which he had had the chance to try out not only in England but also on the Paris-Versailles route.<sup>38</sup> Negrelli came to a definite conclusion, which he summarised as follows: "*Für industrielle Staaten sind die Eisenbahnen unentbehrlich, wie die Fabriken unentbehrlich sind.*"<sup>39</sup> And to those who were sceptical of railways in mountainous areas because of the supposedly excessive costs compared with those across the European and American

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<sup>35</sup> E. Oberegger, *Die österreichischen Pferde-Eisenbahnen*, Sattledt, 2007; Id., *A brief history of the "Budweiser Pferde-Eisenbahn" (horse-drawn railway Budweis-Linz-Gmunden) 1807-1873/1903*, Sattledt, 2010; J. Sima, *Die Pferdeeisenbahn Budweis - Linz - Gmunden. Ein Beispiel der Technikgeschichte aus der Sicht des Denkmalschutzes*, Vienna, 2008; H. Savernik, *Der Dampftrieb auf der Pferdeeisenbahn (Budweis -) Linz - Gmunden*, Linz, 2009.

<sup>36</sup> C.F. Deihsen, *Alois Ritter von Moldelbe*, pp. 43-47.

<sup>37</sup> L. Negrelli, *Ausflug nach Frankreich, England und Belgien zur Beobachtung der dortigen Eisenbahnen, mit einem Anhang über Anwendung von Eisenbahnen in Gebirgsländern*, Frauenfeld, 1838, pp. 6-7.

<sup>38</sup> *Ibid.* pp. 177-178, 190-191.

<sup>39</sup> "For industrial nations, railways are indispensable, just as factories are indispensable" (*Ibid.*, p. 192).

plains, he replied that there were no technical or economic obstacles to railway travel in the Alpine region.<sup>40</sup> Negrelli was sure that the Alpine area would become central to trade and travel if it could continue to play a mediating role between North and South, between Eastern and Western Europe. He advocated the reorganisation of Alpine communication routes to act as links among countries and peoples and connect the ports of the Mediterranean directly with Central Europe.<sup>41</sup>

Despite his professional commitments in Switzerland, Negrelli managed to conduct inspections along the Unterinntal to verify the feasibility of a railway connecting Bavaria to Tyrol and then over the Brenner Pass and into northern Italy. In January 1838 he wrote a report illustrating the proper route from Innsbruck to Kufstein,<sup>42</sup> but twenty years would pass before local public opinion came to see the need for innovation, overcoming traditionalist pressures and allowing the project to be completed.<sup>43</sup>

#### 4. Return to Austria

In 1839 Negrelli made a series of contacts to prepare his return

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<sup>40</sup> See in this regard the remarks of A. Leonardi, *Luigi Negrelli: un protagonista del take off ferroviario*, pp. 195-214.

<sup>41</sup> T. Gatani, "La Spanisch-Brötli Bahn. La prima linea ferroviaria svizzera", in *Rivista della Camera di commercio Italiana per la Svizzera*, 2001, n. 6, pp. 53-56. A. Leonardi, *Luigi Negrelli: un protagonista del take off ferroviario*, pp. 195-214.

<sup>42</sup> G. Zwanowetz, *Die Anfänge der Tiroler Eisenbahngeschichte. Ein Beitrag zur Verkehrs und Wirtschaftsgeschichte Österreichs in den Jahren 1835 bis 1859*, Innsbruck, 1952, pp. 71-94; Ch. F. Deihsen, *Alois Negrelli*, pp. 57-61.

<sup>43</sup> The Innsbruck-Kufstein stretch was inaugurated in November 1858 (A. Jursitzka, H. Pawelka, *Tirols Schienenweg in den Süden*, Meerbusch, 2007, pp. 6-36). The stretch over the Brenner Pass, designed by Karl von Etzel, with the opening of the Innsbruck-Bolzano section, was completed in 1867; the Bolzano-Verona line had been completed in 1859 (E. Baumgartner, *Eisenbahnlandschaft Alt-Tirol: Verkehrsgeschichte zwischen Kufstein und Ala im Spannungsfeld von Tourismus, Politik und Kultur*, Innsbruck, 1990, pp. 11-17; L. Facchinelli, *La ferrovia Verona-Brennero. Storia della linea e delle stazioni nel territorio*, Bolzano, 1995, pp. 23-46; H. Petrovitsch, *Schientransit Brenner. Betrieb und Technik Kufstein-Bozen*, Meerbusch, 2008, pp. 7-38.

to what he called his *theuer Vaterland*. In fact, although he was well-off and very popular in Switzerland, he did not want to end his life in that country, as he told his friend Johann von Ebner on 30 May 1839.<sup>44</sup> So when, on 13 January 1840, the management of Kaiser Ferdinand Nordbahn offered him a position as responsible for the expansion of its railway network, Negrelli accepted gladly.<sup>45</sup> The Monarchy was in a moment of great momentum for rail projects, although policy was conditioned by the alternation between the direct engagement of the State and the involvement of private groups.<sup>46</sup>

During the 1830s the role of the k.k. privilegierte Kaiser Ferdinand Nordbahn, financed by the Rothschild group, came to the fore. Nor did Nordbahn lose its importance even after 1841, when Chancellor Clemens Lothar von Metternich and the president of the Hofkammer Karl Friedrich von Kübeck instituted a railway expansion programme functional to the strategic needs of the Monarchy and entrusted the construction of new railways to the State. This situation lasted for practically the entire period in which Luigi Negrelli was active in the railway sector within the Danube Monarchy, i.e. until 1854, when private intervention in the construction and management of the railways was restored.<sup>47</sup>

Between 1840 and 1842 Luigi Negrelli was Nordbahn's Inspector General for Railway Construction; under the new Habsburg railway policy of 1841, from 1 April 1842 to 1848 he was on leave from the Nordbahn to serve as Inspektor der k.k. technisch-administrativen Generaldirektion für die Staatseisenbahnen.<sup>48</sup> At that time the Austrian railway network was expanding rapidly. The documentation

<sup>44</sup> I. Nemeth, *Luigi Negrelli und sein geistiges Vermächtnis*, p. 92.

<sup>45</sup> A. Leonardi, *Luigi Negrelli: un protagonista del take off ferroviario*, pp. 195-214.

<sup>46</sup> H. Matis, *Österreichs Wirtschaft 1848-1913. Konjunkturelle Dynamik und gesellschaftlicher Wandel im Zeitalter Franz Josephs I.*, Berlin, 1972, pp. 109-192.

<sup>47</sup> R. Sandgruber, *Das Jahrhundert der Bahn*, in R. Linke, H. Schopf (ed.), *Zug um Zug*, Vienna-St. Pölten, 1987, pp. 132-141; Id., "Wir fahren mit Eisenbahn", in *Beiträge zur historischen Sozialkunde/Verein für Geschichte und Sozialkunde*, 17, 1987, pp. 41-56.

<sup>48</sup> See for details: TMW, *Nachlaß Negrelli*, 05\_0175\_000, *Enthebung bei der Nordbahn für die Verwendung im Staatsdienst*, 23. März 1842. A. Birk, *Alois von Negrelli*, vol. I, pp. 169-170.

on this period in the *Nachlaß* Negrelli is particularly rich and testifies to his role as a protagonist of rail development in the Habsburg Monarchy.<sup>49</sup>

## 5. Projects in the railway sector

Negrelli supervised several projects during this period, starting with the Nordbahn line Lundenburg–Olmütz–Prague in the Czech provinces, and also performed preliminary studies for the Galician railway and for the Lemberg–Czernowitz section in modern-day Ukraine.<sup>50</sup> The design, construction and management of these railway lines were not just proof of his undeniable technical skills; they showed that Negrelli was a civil engineer, in the broadest sense of the term. He analysed transport networks in their entirety, with special attention to the economic and functional characteristics of railways, which he considered indispensable, the driving force of progress. Drawing on both German and French engineering cultures, Negrelli successfully combined “the ability of an engineer and the perspicacity of a transport technician and economist.”<sup>51</sup> For Negrelli, the right choice of route was not necessarily the shortest but the one that best served the people of a given area and their economic activities. And once the starting and arrival points of a given line had been established, then in his view, just as it was not necessary to take the shortest route, so there was no need to comply with the various local peculiarities and “parochial” demands. What was necessary was careful evaluation of the railway’s impact on the local area, taking all the time needed to verify the most significant

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<sup>49</sup> The *Nachlaß* contains 140 documents on Negrelli’s time in Switzerland and 100 on his employment at the Nordbahn. His state service work is particularly well documented with over 500 archival units. Most of these documents concern railway projects.

<sup>50</sup> See: TMW, *Nachlaß* Negrelli, 05\_0174\_000, Brief, 22.03.1842. The long viaduct near Prague is still known today as the “Negrelli viaduct”. A. Leonardi, *Luigi Negrelli: un protagonista del take off ferroviario*, pp. 195-214.

<sup>51</sup> R. Contro, *I progetti di Luigi Negrelli*, p. 374.

economic impact not on a single community but on an entire region.<sup>52</sup>

In a report dated 20 January 1842, Negrelli reiterated the conviction expressed in 1838 of the usefulness of steam trains even in mountainous areas and close to the watershed.<sup>53</sup> That same year he published that report under the title: *Über Gebirgseisenbahnen* (About mountain railways).<sup>54</sup> His proposal was to use a sort of hairpin bend that the train would have to pass through, proceeding in opposite directions, powered by two locomotives, one at the head and one at the tail. The concept, certainly original, would have been onerous, and in fact it was used in only one railway project within the Habsburg Monarchy.<sup>55</sup>

Negrelli's work at Nordbahn had given him the tools to evaluate where and how a railway route could be plotted. At the same time, he had been able to refine his technological skills, which he combined with the analysis of a given area's transport needs. Up to 1848 he would make the skills gained in previous years available to the state railways. This was a particularly productive period. Not only did Negrelli complete a series of studies, projects and evaluations on the railway system of both the Habsburg Monarchy and the Swiss Confederation, as well as some southern German states, but he also began preliminary studies for the design of the Suez Canal.

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<sup>52</sup> With regard to the Vienna-Prague line see: TMW, *Nachlaß Negrelli*, 05\_0167\_000, Brief Landespräsidenten Baron Kübeck, 19. Februar 1842. Also interesting are the statistical data on the cities along the route of two possible alternatives along this line (TMW, *Nachlaß Negrelli*, 05\_0165\_000, 1841, *Statistische Bilanz der zwei projectirten Eisenbahnlilien zur Verbindung der k.k. priv. Kaiser Ferdinands Nordbahn mit Prag enthaltend die im Bereiche von 1 ½ Meilen gelegenen Städte und deren Verhältnisse*).

<sup>53</sup> TMW, *Nachlaß Negrelli*, 05\_0166\_000, 20. Jänner 1842: *Die Eisenbahnen mit Anwendung der gewöhnlichen Dampfwägen als bewegende Kraft über Anhöhen und Wasserscheiden sind ausführbar. Ein auf Erfahrungen begründeter und practisch dargestellter Vorschlag des Oberingenieurs L. Negrelli*.

<sup>54</sup> L. Negrelli, *Die Eisenbahnen mit Anwendung der gewöhnlichen Dampfwägen als bewegende Kraft über Anhöhen und Wasserscheiden sind ausführbar. Ein auf Erfahrungen begründeter und practisch dargestellter Vorschlag des Oberingenieurs L. Negrelli, General-Inspector der a. pr. Kaiser Ferdinands Nordbahn*, Vienna, 1842.

<sup>55</sup> E. Oberegger, *Ing. Luigi Negrelli (1799-1858). Seine Bedeutung im Kontext der österreichischen Eisenbahngeschichte. Eine Standortbestimmung*, Sattledt, 2009, pp. 3-5.

## 6. From railways to the Canal

In the midst of this period of intense planning, supervision and consultancy in the railway sector, Negrelli started to draft his first projects for cutting the Isthmus of Suez and linking the Mediterranean to the Red Sea. The canal project is undoubtedly his most important work. It represented the culmination of his ability not only to design transport systems but also to truly grasp their social significance. This transcended the boundaries of his native mountains and those of the Central European regions where he had spent much of his life. The concept was an integrated rail-ship system to connect a Europe engaged in all-out industrial expansion with the Far East – a project with enormous potential.<sup>56</sup>

After his return to Austria, Negrelli intensified his efforts for construction of the Suez Canal, into which he had first begun to look in 1837 and 1838 during his stay in Switzerland.<sup>57</sup> He established contacts and then corresponded with some of the leading exponents of Saint-Simonianism, who were particularly active in advocating the Canal. Count Henri de Saint-Simon himself supported large-scale projects for progress and economic and social renewal in a spirit of enlightened rationalism and pacifist universalism.<sup>58</sup> Amongst the movement's members was the railway engineer

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<sup>56</sup> L. Negrelli, *Die gegenwärtigen Transport- und Kommunikationsmittel Egyptens mit Beziehung auf die beantragte Durchstechung der Landenge von Suez*, Vienna, 1856. Two more recent works on Negrelli's role in the planning of the Suez Canal are: Ch. F. Deihsen, *Alois Negrelli, Ritter von Moldelbe und der österreichische Anteil an der Entstehung des Suezkanals*, Vienna, 1991; H. Helps, *Luigi Negrelli, Engineer*, pp. 317-339.

<sup>57</sup> His great-grandson maintains that Negrelli first became interested in the canal project in 1837-1838 following an encounter with the German naturalist and explorer Alexander von Humboldt (N. Negrelli, *Die Lüge von Suez*, pp. 81-87). There are no traces of a direct relationship between Negrelli and Humboldt in the *Nachlaß*, although the latter was in contact with A. Dufour Feronce. A meeting between the two is not necessarily to be ruled out. See: T. Gatani, *Luigi Negrelli ingegnere trentino e europeo*, pp. 237-238.

<sup>58</sup> B. Jouve, *L'épopée saint-simoniennne. Saint-Simon, Enfantin et leur disciple Alexis Petit: de Suez au pays de George Sand*, Paris, 2001; A. Picon, *Les saint-simoniens. Raison, imaginaire et utopie*, Paris, 2002; N. Coilly, P. Régner (eds.), *Le Siècle des saintsimoniens du nouveau christianisme au canal de Suez*, Paris, 2006.

Barthélemy Prosper Enfantin, who had organised a scientific expedition to Egypt to study the feasibility of cutting the Isthmus of Suez in 1833 and became a prominent backer of the project.<sup>59</sup> The expedition's geognostic and topographical surveys – which estimated a difference of about ten metres between the levels of the two seas – provided the basis for various preliminary projects.<sup>60</sup> The most significant was that of the French engineer in the service of the Egyptian Viceroy, Louis Maurice Linant de Bellefonds (Linant Bey), which envisaged a direct connection between the two seas, with locks at both ends.<sup>61</sup>

Negrelli contacted Enfantin and was fascinated by this idea of the canal. There was considerable correspondence between them, with 43 letters dating from January 1847 to September 1855, kept in the *Nachlaß* Negrelli. But as noted, Negrelli's interest in the channel had begun long before the start of this correspondence: in his 1857 report to the k.k. geographische Gesellschaft in Vienna, he stated that he had been committed to developing the idea for twenty years.<sup>62</sup> It was therefore a long-standing concern, but it came to be

<sup>59</sup> P. Régnier, *Les saint-simoniens en Égypte 1833-1851*, Cairo, 1989.

<sup>60</sup> S. Bono, *Il canale di Suez e l'Italia*, p. 412. On the age-old quest for a connection between the Red Sea and the Mediterranean, see: Id., "Precedenti storici del canale di Suez: idee e progetti dal secolo XVI al XIX", in A. Leonardi (ed.), *Luigi Negrelli ingegnere*, pp. 141-159.

<sup>61</sup> J. Mazuel, *L'Oeuvre géographique de Linant de Bellefonds: étude de géographie historique*, Cairo, 1937.

<sup>62</sup> The exact words that Negrelli spoke at the meeting of the geographical society were: "Schon seit bald 20 Jahren mit derselben beschäftigt, gereicht es mir zur angenehmsten Befriedigung wahrzunehmen, wie die öffentliche Meinung nicht nur in Europa, sondern auch in Amerika, und im Orient selbst sich immer günstiger über den Werth des grossen Unternehmens ausspricht, und in dieser ehrenden Anerkennung finden die Männer, welche sich mit der Durchführung desselben befassen, jene ruhige Kraft der Ueberlegung und der Ausdauer, welche am Ende immer alle wie immer gearteten Schwierigkeiten überwindet, und zum Ziele führt" (For almost 20 years now, I have been involved in this business, and it gives me great satisfaction to see how the public opinion, not only in Europe but also in America and in the Orient itself, is increasingly persuaded of the value of this great enterprise, and in this honourable recognition the men who are involved in its implementation find that calm force of thought and perseverance which, in the end, always overcomes all difficulties of any kind and leads to the objective) (F. Foetterle (ed.), *Bericht über die Durchstechung der Landenge von Suez an*

expressed in particularly robust terms through a series of first-level international relations in the early 1840s. At that time, thanks to support from Archduke Maximilian, brother of Emperor Franz Joseph, and from Karl Ludwig von Bruck, Minister of Commerce and Finance,<sup>63</sup> and from Chancellor Metternich himself,<sup>64</sup> Negrelli intensified his efforts and his international contacts to realise the Suez Canal project.

Thus, when Infantin presided over the foundation of the *Société d'Etudes du Canal de Suez* in Paris on 27 November 1846, Luigi Negrelli was a co-founder. The Société was composed of three groups: the "German group" (and not, as most Italian historians wrongly labelled it, the "Austro-German-Italian group"),<sup>65</sup> which included, in addition to Negrelli, the Leipzig-based bankers Albert Dufour Feronce and Louis Sellier; the "French group," which besides Infantin comprised François Barthélemy Arlès-Dufour and the three brothers Jules, Léon and Paulin Talabot; and the "English group," composed of Robert Stephenson and Edward Starbuck.<sup>66</sup>

With the Société d'Etudes, Negrelli became more committed than ever to the project, especially as each of the three group heads – Paulin Talabot, Stephenson and Negrelli – was assigned specific tasks. The German group was to survey the Mediterranean coast to find the ideal location for the outlet of the canal. The French group

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die k. k. geographische Gesellschaft von der Hierzu gewählte Kommission bestehen aus der Herren V. Freiherrn von Andrian, K. Freiherrn von Czörnig, Franz Foetterle, K. Ritter von Ghega, W. Heidinger, Th. Kotschy, A. Ritter von Negrelli, Fr. W. Freiherrn von Reden, F. Freiherrn von Richthofen und L. Stein, Berichterstatter Franz Foetterle, k.k. Berggrath, Vienna, 1857, p. 2).

<sup>63</sup> The correspondence between Negrelli and von Bruck in the *Nachlaß* consists of over 80 documents, dated from 03.10.1846 (TMW *Nachlaß* Negrelli, 06\_0259\_007) to 26.03.1858 (TMW *Nachlaß* Negrelli, 12\_1457\_000).

<sup>64</sup> R. Agstner, *125 Jahre Suezkanal. Österreich (-Ungarn) und seine Präsenz am Isthmus von Suez. Zur Geschichte der Konsulate in Suez, Ismailia und Port Said 1844-1956*, Cairo, 1995.

<sup>65</sup> This "nationalistic" misrepresentation, which is based solely on Negrelli's surname, has even affected prominent scholars like Angelo Sammarco, Armando Levi Cases and Zara Olivia Algardi (A. Sammarco, Luigi de Negrelli; Id., *Suez, storia e problemi*; A. Levi Cases, *Luigi Negrelli e il progetto definitivo del canale di Suez*, pp. 658-662; Z.O. Algardi, *Luigi Negrelli, l'Europa*, p. 26).

<sup>66</sup> J. C. Roux, *L'Isthme et le canal de Suez*, Paris, 1901, vol. I, pp. 208-209.

was to study the terrain where the canal was to be excavated, and the English group was responsible for examining the canal's outlet in the Red Sea, near the port of Suez.<sup>67</sup> Many documents from the *Nachlaß* demonstrate Negrelli's care and enthusiasm in preparing for the mission in Egypt. Asking his close friend, the Swiss architect Felix Kubli, to be his right-hand man during the trip, Negrelli wrote: "I cannot offer you a reward, because we will sacrifice our services on the altar of Europe, and Europe will be grateful to us only if the canal is constructed."<sup>68</sup>

A series of impediments – the revolutions of 1848 as well as disputes with Robert Stephenson, who repeatedly put off the departure – prevented the three head engineers from travelling to Egypt. Some historians have seen Stephenson's behaviour as an attempt to block the project, insofar as like the British government he feared potential French dominance over the project and instead backed a railway link between Alexandria and Suez, which was completed in 1857.<sup>69</sup> Negrelli nonetheless arranged for a group of technicians, the so-called "German brigade" under the direction of Karl Jassnüger, to travel to the Mediterranean.

Jassnüger tracked the progress of the fieldwork in Egypt and itemised the material available to Negrelli to develop the project. In July 1847, Jassnüger informed Negrelli that the brigade had finished the survey of 7,000 *klafter* (over 13 kilometers)<sup>70</sup> of coast around the point identified as the ideal outlet for the canal, and that it was about to conclude the survey and cross-section of the area's seabed.

Negrelli concerned himself with the technical side of the project as well as its financial aspects, considering how the work could be funded without appearing to be a predominantly French enterprise.

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<sup>67</sup> *Ibidem*.

<sup>68</sup> TMW, *Nachlaß* Negrelli, 07\_0469\_000, 14.11.1847. Felix Kubli (1802-1872) accompanied Negrelli to Egypt in 1855.

<sup>69</sup> A. Giuntini, *Le meraviglie del mondo*, pp. 68-69; T. Gatani, *Luigi Negrelli ingegnere trentino ed europeo*, pp. 248-257.

<sup>70</sup> TMW, *Nachlaß* Negrelli, 08\_0554\_000, 01.06.1847; 08\_0555\_000, 16.06.1847. The *Klafter* is a Central European unit of length equal to 1.89 m.

This danger had engendered concern in Britain as well as in Egypt, where the Khedive or Viceroy Mohammed (or Mehmet) Ali was increasingly sceptical about the project.<sup>71</sup> Albert Dufour Féronce, founding member of the German group, recounts this scepticism in the first letter regarding Suez conserved in the *Nachlaß*, dated 13 November 1845: “The French press cannot be prevented from making a fuss if England regards the project with enthusiasm. But in England the French interference in the canal question would immediately give rise to suspicions that its real aim is to set further foot in Egypt and expand the French conquest of North Africa. In order to ease the political worries of the two great naval powers, everyone who is interested in the project believes that the best thing would be for Germany to take the lead. The whole affair would thus appear to be purely commercial, given that the two great German powers [Prussia and Austria] do not have notable navies and cannot give rise to concerns anywhere [...] The engineer Linant, who has been at the service of the pasha for almost 20 years and devotes his activity in particular to hydraulic works, will certainly be known to her. The preliminary works we have are by your hand and are based on a very precise knowledge of the area.”<sup>72</sup> This letter of Dufour Féronce’s clearly demonstrates that Negrelli was fully involved in analysis of the other projects and capable of comparing them with his own, and engaged in procuring the financial resources that could make the company operational. Given this state of affairs, Negrelli began to be concerned specifically with the involvement of his own country, the Habsburg Monarchy, as well as Central European financial groups, in the implementation of the project.

Within the “German group” Negrelli managed to secure five out of ten places for Austria and to find five institutions willing to invest

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<sup>71</sup> W. Treue, “Das österreichische-mitteldeutsche und das norddeutsch staatliche und private Interesse am Bau des Suezkanals”, in *Vierteljahresschrift für Sozial- und Wirtschaftsgeschichte*, 57, 1970, pp. 534-555. G. Lo Giudice, *L’Austria, Trieste ed il Canale di Suez*, Catania, 1981.

<sup>72</sup> TMW, *Nachlaß* Negrelli, 06\_0259\_002, Leipzig, 13.11.1845.

in the project.<sup>73</sup> Financing, in fact, was one of Negrelli's main concerns, as can be seen from his extensive and assiduous correspondence with both Dufour Féronce<sup>74</sup> and with the Trieste banker Pasquale Revoltella. Revoltella in particular would play a key role in the Austrian funding of the project, and traditional Italian historiography has wrongly labelled him the "Italian" promoter of the Suez canal.<sup>75</sup> Pasquale Revoltella also played a direct role in the administration of the financial resources of the Negrelli family itself.<sup>76</sup>

Not only on financial matters but also on technical and inevitably political issues, there is a voluminous correspondence between Negrelli and some leading figures of the Habsburg government: from von Bruck to Metternich.<sup>77</sup>

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<sup>73</sup> TMW, *Nachlaß* Negrelli, 07\_0496\_000, 21.01.1847. The institutions were: the municipality and the chamber of commerce of Trieste, Austrian Lloyd, the Viennese union of industries, and the chamber of commerce of Venice (which was part of the Lombardo-Venetian kingdom and thus Austrian and not Italian, as many authors have erroneously stated).

<sup>74</sup> The correspondence with Dufour-Féronce began in 1845 (TMW, *Nachlaß* Negrelli 06\_0259\_002) and lasted until 1855 (TMW, *Nachlaß* Negrelli 12\_1148\_000).

<sup>75</sup> The relationship between Negrelli and Revoltella is reflected in over 200 documents in the *Nachlaß*. It began in 1850 with regard to Negrelli's railway projects in the Lombardo-Venetian region and then shifted to Suez, as, through Negrelli, Revoltella became Lesseps' Austrian contact for the financing of the canal (TMW, *Nachlaß* Negrelli, 09\_0821\_000 – 17\_1586\_067). On the figure of Pasquale Revoltella, which remains in many respects controversial, see: G. Cervani, *Le voyage en Égypte (1861-1862) di Pasquale Revoltella*, Trieste, 1962; Id., "Gli ambienti economici triestini, Pasquale Revoltella ed il progetto della realizzazione del Canale di Suez," in A. Leonardi (ed.), *Luigi Negrelli ingegnere e il Canale di Suez*, pp. 187-250; M. Masau Dan, V. Strukelj, L. Crusvar (eds.), *Trieste-Suez. Storia e modernità nel "Voyage en Égypte" di Pasquale Revoltella*, Trieste, 2015.

<sup>76</sup> After Negrelli's death, Revoltella remained in close contact with Lesseps, with whom he allegedly had some shady dealings. Negrelli's daughter accused Revoltella of complicity in the theft of her father's project, with the consequent financial loss suffered by the heirs. On the topic see the introduction of F.A. Scaglione (ed.), *Luigi Negrelli e il canale di Suez*, vol. 1, pp. XVI-XXV.

<sup>77</sup> The correspondence with Karl Freiherr von Bruck, which consists of more than 80 documents in the *Nachlaß*, mostly letters and official reports, dating from 3 October 1846 to 26 March 1858, is particularly rich (TMW, *Nachlaß* Negrelli 06\_0259\_007 – 13\_1457\_000).

## 7. The experience in the Lombardo-Venetian Kingdom and the evolution of the Suez Canal project

The turbulent events of 1848, which wreaked havoc throughout Europe, impacted on the planning of the Suez Canal in two ways: directly, they caused the indefinite postponement of the Egyptian trip of the three head engineers of the Société d'Études; and indirectly, they led to a slowdown of the entire project. In the aftermath of the conflict, the Austrian government named Negrelli to oversee the reconstruction of the heavily damaged infrastructure of the Lombardo-Venetian Kingdom, the empire's Italian "province." In 1849 he settled in Verona, taking over the general management not only of road works, but also of hydraulic, telegraphic and above all railway works.<sup>78</sup>

In that same year Franz Joseph gave him the honorary title of Knight of the Empire, with the predicate "von Moldelbe" to be added to his surname, in a clear reference to a series of projects of his in Bohemia; the title would be officially conferred in 1850.<sup>79</sup> In Verona, where he stayed until 1855, Negrelli formed a series of technical-scientific relations with all the designers who were collaborating with the various governments of central and northern Italy for the construction of the railway network throughout that area, including Pietro Paleocapa, who was not only an engineer but also a minister of the Sardinian Kingdom and was following developments in the design of the Suez Canal.<sup>80</sup>

Extensive evidence of Negrelli's various projects in the Lombardo-Venetian Kingdom can be found in a dense correspondence that also contains numerous letters addressed to his second wife Karolina Weiß Starkenfels – "liebe Lotti" – in which, as in his correspondence with his friend Johann Nepomuk Ebner of Vorarlberg, he

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<sup>78</sup> A. Birk, *Alois von Negrelli*, vol. II, pp. 12-38; A. Bernardello, "Il commissario Negrelli e le comunicazioni stradali e ferroviarie nel Lombardo-Veneto (1848-49)", in *Il Risorgimento*, n. 1-2, 1997, pp. 201-216.

<sup>79</sup> A. Birk, *Alois von Negrelli*, vol. II, p. 238.

<sup>80</sup> A. Leonardi, *Dall'Europa a Suez: il ruolo di Luigi Negrelli*, pp. 251-265.

dealt not only with private matters but with the political climate in northern Italy. The correspondence shows that Negrelli's attitude towards the protagonists of the Risorgimento was not in the least sympathetic to the cause of Italian unification, as many Italian historians affirmed in the interwar period and still do today. In February 1848, shortly before the outbreak of the First Italian War of Independence, Negrelli wrote from Vienna to his friend Martin Escher: "We want to remain the masters of Lombardy and of Venice, no matter what happens anywhere else in Italy, and Mazzini and company have to be careful not to attack us within our borders. Austria's patience is immense but so is its power: woe to those who come to disturb its peace."<sup>81</sup> In October of the same year, in Verona, Negrelli wrote to his friend Kubli: "We are armed to the teeth and if it were not for the cancer that is spreading in the heart of the monarchy we would not be afraid even if [...] Mazzini, Gioberti and the whole French Alpine Army sought to drive us out of the *Bel Paese*."<sup>82</sup> Thus his attitude towards the protagonists of the Risorgimento was quite alien to the alleged "pro-Risorgimento" sympathies attributed to him by the Italian historical literature of the interwar period<sup>83</sup> and even by more thorough, recent studies.<sup>84</sup>

Negrelli's work in the Lombardo-Venetian Kingdom caused him a certain amount of distress, even though from the outside his position was viewed with admiration and even with envy. "My position here is such that in Vienna I am envied," he wrote to his friend Ebner on 11 April 1851 from Verona. Yet "I am not glad to stay here. I am so closely identified with Germany and precisely with the Austro-German Monarchy that I would prefer to be there. However, one must appreciate the place where duty calls."<sup>85</sup>

<sup>81</sup> TMW, *Nachlaß* Negrelli, 08\_0589\_000, 01.02.1848.

<sup>82</sup> TMW, *Nachlaß* Negrelli, 08\_0667\_000, 16.10.1848.

<sup>83</sup> A. Sammarco, *Luigi de Negrelli*, pp. 66-68.

<sup>84</sup> Z.O. Algardi, *Luigi Negrelli, l'Europa*, pp. 145-158.

<sup>85</sup> The exact words which he addressed his friends were as follows: "*Gerne bin ich aber nicht hier. Ich bin mit Deutschland, nämlich Deutschösterreich so sehr identifiziert, als da ich hier gerne sein könnte. Doch wo die Pflicht bindet muss man es sich gefallen lassen*" (Österre-

In the copious correspondence addressed mainly to his wife, when his work responsibilities obliged him to move from Verona to the outlying areas, he did not fail to refer also to specific technical and economic questions that attracted his vigilant attention.

Negrelli's intense activity in Venetia and Lombardy was unexpectedly interrupted in 1855. In September, after a complex inspection by the so-called "Mission Trattner,"<sup>86</sup> he was dismissed from his prestigious post. The investigation into his work was supposed to have found misconduct, as was alleged in Vienna, and even abuse of power in the management of railway development projects in northern Italy. Actually, however, the inspection did not substantiate any such charges, and the final report to the emperor explicitly stated: "The director of the constructions, Knight Negrelli, is not suspected by anyone; he does not display luxuries and leads a life suited to his earnings [...] but he is, as the Italians say of him, more a knight than a director."<sup>87</sup>

Given these and other, similar reports, it is clear that Negrelli's removal in 1855 had nothing to do with some purported pro-Italian position, as some authors have uncritically maintained. Instead, it was related to professional antagonisms disguised as political motives. The Suez Canal project was about to become reality, and as author of the plan tipped to be the definitive choice, Negrelli was swiftly gaining a reputation as the most outstanding Austrian engineer. His rivals sought to bring him into disrepute and at the same time hinder the whole project.<sup>88</sup>

After initially giving full support to the enterprise, Austria turned lukewarm, not least because of the hesitations of Emperor

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ichische Nationalbibliothek, Vienna, Autographensammlung, Autogr. Nr. 129/13, letter from Luigi Negrelli dated 11 April 1851; I. Nemeth, *Luigi Negrelli und sein geistiges Vermächtnis*, p. 93).

<sup>86</sup> The affair, often presented as a plot motivated by national reasons, has been reconstructed in its actual features on the basis of the extensive documentation at the Verkehrsarchiv in Vienna (C.F. Deihsen, *Alois Negrelli*, pp. 219-233).

<sup>87</sup> Cited in: T. Gatani, *Luigi Negrelli ingegnere trentino ed europeo*, p. 191.

<sup>88</sup> A. Birk, *Alois von Negrelli*, vol. II, pp. 165-184; C.F. Deihsen, *Alois Negrelli*, pp. 219-233.

Franz Joseph himself.<sup>89</sup> It seems that those who had masterminded the plot against Negrelli were Baron von Czoernig, who had a strong influence on the young emperor, and the Foreign Minister, the anglophile Count von Buol-Schauenstein.<sup>90</sup>

This was an extremely sad story, however: while the inquiry had found no serious charges to make about his work, Negrelli was tremendously shaken, as evidenced not only by his letters to Escher but also the more formal correspondence addressed to the Trieste banker Pasquale Revoltella, who was playing an increasingly important role in procuring funding for the Canal in Austria and at the same time offering significant assistance in managing Negrelli's family finances.<sup>91</sup> A letter to Revoltella of 20 October 1855, announcing the departure of Negrelli and his family for Vienna, mentions the regret over his removal expressed by Marshal Radetzky, a sincere admirer and friend of Negrelli's: "The excellent Marshal does not cease to bemoan what happened to me [...] no one understands the reason for the rigour of which I am the innocent victim."<sup>92</sup> Less than five months after his dismissal, he was reinstated in the state service and made Inspector General of the State Railways.

In any event, most likely in order to overcome this stressful situation, perhaps the most difficult of his life, Negrelli devoted himself with particular intensity to further study for the improvement of his greatest project – conceived, as noted, as far back as 1837-38 – namely, cutting through the isthmus of Suez.<sup>93</sup>

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<sup>89</sup> See on this: A. Wandruszka, "Die Habsburgermonarchie und das Projekt des Suezkanals," in A. Leonardi (ed.), *Luigi Negrelli ingegnere e il Canale di Suez*, pp. 177-185; U. Corsini, "La questione del canale negli orientamenti politici del governo di Vienna tra il 1843 e il 1859," in G. Adami, Z.O. Algardi, U. Corsini, V. Zignoli, *Luigi Negrelli il Canale di Suez*, pp. 67-115.

<sup>90</sup> A. Birk, *Alois von Negrelli*, vol. II, pp. 165-184; C.F. Deihsen, *Alois Negrelli*, pp. 219-233.

<sup>91</sup> G. Cervani, *Gli ambienti economici triestini*, pp. 187-250.

<sup>92</sup> Letter from Luigi Negrelli to Pasquale Revoltella, 20 October 1855, TMW, *Nachlaß Negrelli*, 12\_1234\_000.

<sup>93</sup> The handwritten documentation – consisting of extensive correspondence and a series of technical reports – conserved in the *Nachlaß Negrelli* – is particularly relevant in this regard.

## 8. The expedition to Egypt

Towards the end of 1855 the Suez Canal project began to regain momentum. In 1854 international developments had finally led to a breakthrough on the long-standing issue of the canal. Mohammed Ali, the Egyptian Viceroy who had taken an interest in the enterprise, had died in 1849. His successors, his son Ibrahim and his grandson Abbas, were not particularly keen on the project and were more interested in the Alexandria-Suez railway championed by the British government.<sup>94</sup> When Abbas was assassinated in July 1854, his next-in-line was Mohammed Said, amongst whose acquaintances was Ferdinand de Lesseps, an extremely well-connected French diplomat who had taken the canal matter into his own hands when the Société d'Etudes appeared to have slipped into inactivity. De Lesseps, who had previously served as the French consul general in Egypt, succeeded in gaining the new Viceroy's interest and persuading him to issue a "firman," a mandate, for the construction of a waterway between the Red Sea and the Mediterranean.<sup>95</sup> Numerous sources concur that de Lesseps was in possession of the Société d'Etudes's plans, but this alone did not immediately make him the accredited leader of the enterprise.<sup>96</sup>

Before moving on to the next phase of the project, it was indispensable to overcome the distrust of the Egyptians, who feared that the canal might be a Trojan horse for French colonial conquest. The Viceroy issued a directive to Lesseps' commanding that the executive company that constructed the canal not rely exclusively on French money but have truly international capital, with major ben-

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<sup>94</sup> *Railways in Egypt; communication with India*, London, 1857; A. Sammarco, *Les règnes de Abbas, de Saïd et d'Ismâïl avec une aperçu de l'histoire du Canal de Suez*, Rome, 1935.

<sup>95</sup> G. Edgar Bonnet, *Ferdinand de Lesseps*, pp. 132-144. J. Pudney, *The Lesseps' Canal*, pp. 34-36. Z.O. Algardi, *La intramontabile compagnia di Suez*, pp. 441-448. Information on Lesseps' activity and the initiatives that allowed the transition from the project to the construction of the canal is reported in the journal *L'Isthme de Suez. Journal de l'Union des Deux Mers (1856-1866)*.

<sup>96</sup> A. Sammarco, *Suez, storia e problemi*, pp. 114-126; N. Montel, *Le chantier du canal de Suez (1859-1869). Une histoire des pratiques techniques*, Paris, 1999, pp. 36-42.

efits for Egypt. At this point, the Austrian and Prussian participation acquired strategic importance.<sup>97</sup>

The *Nachlaß* contains significant evidence of Negrelli's involvement in the preparatory work as well as the actual execution. In December 1854 he told his friend Escher that de Lesseps' having obtained the concession agreement was a quantum leap towards the cutting of the isthmus and gave him hopes of ending his career with this great work.<sup>98</sup> Negrelli's relationship with Lesseps now became closer, as he saw the French diplomat as the man capable of turning the project he had been working on for so many years into reality.<sup>99</sup>

After leaving Verona in September 1855, Negrelli had devoted all his energy to making the Suez project a reality. Above all, he had perfected it in the firm belief that there was no difference of level between the two seas, especially after the surveys done by the French engineer Paul Adrien Bourdaloue.<sup>100</sup> His work as a designer of the canal thus intensified, although the Austrian government, through Minister Buol Schauenstein, was clearly losing enthusiasm for the realisation of this great work.<sup>101</sup> Given that the initiatives of the Société d'Études du Canal de Suez were not taking off, whereas Lesseps was very active, Negrelli proposed to the Austrian Government that the Société be transformed into a multinational company.<sup>102</sup> In fact, he feared that Lesseps' initiative could marginalise not only the work of the Société but also that of the Habsburg Monarchy itself. The transformation was not effected, however. In the meantime, on 5 January 1856, juggling multiple priorities with extreme confidence, Lesseps obtained a new concession from Mohammed Said, now with a clause requiring the consent of the Ottoman Sultan and the approval of the statutes of the *Compagnie*

<sup>97</sup> G. Cervani, *Gli ambienti economici triestini*, pp. 187-250; G. Lo Giudice, *L'Austria, Trieste ed il Canale di Suez*, pp. 79-98.

<sup>98</sup> TMW, *Nachlaß Negrelli*, 11\_1118\_000, 30.12.1854.

<sup>99</sup> A. Birk, *Alois von Negrelli*, vol. II, pp. 238-250.

<sup>100</sup> M. Baratta, *Luigi Negrelli e il Canale di Suez*, pp. 47-52.

<sup>101</sup> A. Wandruszka, *Die Habsburgermonarchie und das Projekt des Suezkanals*, pp. 177-185.

<sup>102</sup> G. Lo Giudice, *L'Austria, Trieste ed il Canale di Suez*, pp. 82-84.

*Universelle du Canal Maritime de Suez*, which he founded on 15 December 1858 to carry out the works.<sup>103</sup>

Before signing the second concession, Said also assigned an international commission of experts to examine all the projects developed to that point and select one. The first act of this commission, a selection of the most illustrious engineers and experts from eight countries, including Negrelli representing Austria,<sup>104</sup> was to send a sub-committee to Egypt. Negrelli was summoned to be part of this small group as well. The sub-committee was intended to resolve some outstanding issues by appropriate field surveys. In fact, the existing projects diverged on some fundamental questions, including the access points to the canal, especially at the Mediterranean end (a matter long studied by Negrelli himself).

From 10 November 1855 to 11 January 1856, Negrelli thus made his first and only trip to Egypt.<sup>105</sup> His letters from Egypt shed light on the perception of the “Levant” in the eyes of a European who considered the landscape, architecture, flora and fauna, customs and traditions with great curiosity and avoided the usual stereotypes about the Orient.<sup>106</sup> His joy at finally reaching Egypt, eight years after having first started to plan the trip, is evident in a letter to his wife of 19 December: “We are constantly engaged in pushing the fulfilment of our duties towards the final goal and I think that I realised

<sup>103</sup> P. Maltese, *Storia del Canale di Suez. L’Egitto e il canale 1833-1956*, Milan, 1978, pp. 63-69.

<sup>104</sup> Besides Negrelli – appointed as Inspector General of the Austrian State Railways – the commission comprised: F.W. Conrad, Chief Engineer and state manager of the hydrographic system, The Hague, as chairman; Capt. Harris, East India Company Navy, London; Capt. Jaures, Imperial French Navy, Member of Council of French Admiralty; M. Lentze, Chief Engineer of Works on the Vistula, Berlin; M. Lieussou, Hydrographical Engineer, Imperial French Navy; J.R. Mac Clean, Civil Engineer, London; C. Manby, Civil Engineer, London; M. Montesinos, Director of Public Works, Madrid; P. Paleocapa, Minister of Public Works, Kingdom of Sardinia; A. Renaud, Inspector General, Ponts et Chaussées, France; J.M. Rendel, Civil Engineer, London; Rear-Admiral Rigaut de Genouilly, Imperial French Navy (F. Foetterle (ed.), *Bericht über die Durchstechung der Landenge von Suez*, p. 10).

<sup>105</sup> A. Birk, *Alois von Negrelli*, vol. II, cit., pp. 238-250.

<sup>106</sup> For the European perception of the Orient, see: E.W. Said, *Orientalism*, London, 2003.

at a glance what separates the Red Sea from Lake Timsah! [...] I have no cough or sorrows, there are no gross official letters or malevolence to plague me and I am carrying out one of the most wonderful tasks in the world – it is no surprise that my health has responded to this state of grace.”<sup>107</sup>

Returning to Vienna in January 1856, not even five months since his dismissal, the allegations against him having been definitively refuted, he was appointed *General-Inspektor der österreichischen Eisenbahnen*. Negrelli could announce this with a certain pride in a letter of 23 February 1856 to Revoltella. “I only communicate to my friend,” he wrote, “such an honorable and supportive appointment after the iniquitous plots that had been shamefully set afoot to get rid of me”.<sup>108</sup>

In the meantime, Viceroy Said wanted the international commission, convened in Paris for June 1856, to decide definitively which project to adopt. The short list included the projects drawn up by the French engineers in the service of Egypt, Linant de Bellefonds and Eugene Mougel Bey, and those of the Société d’Etudes du Canal de Suez. The members of the old Société d’Etudes were not on the commission, with the notable exception of Negrelli himself, whose expertise was universally recognised.

## 9. The selection of Negrelli’s project

Ahead of the meeting of the commission, in May 1856, Negrelli published a book making the case for his own project. The final part describes the environmental and geological characteristics of the land where the excavation was to be carried out, as well as the characteristics of the future canal. The volume is entitled: *Die gegenwärtigen Transport und Kommunikationsmittel Egyptens mit Beziehung auf*

<sup>107</sup> The mention of “official letters” was evidently a reference to the “Mission Trattner”, which had deeply wounded him (TMW, *Nachlaß* Negrelli, 12\_1252\_000, 19.12.1855).

<sup>108</sup> TMW, *Nachlaß* Negrelli, 12\_1312\_000, 23.2.1856. In the letter he also informed Revoltella that his new place of work was the Ministry of Transport in Vienna.

*die beantragte Durchstechung der Landenge von Suez* [Egypt's present means of transport and communication in relation to the proposed piercing of the Isthmus of Suez].<sup>109</sup> To give it greater circulation, Negrelli published his book also in French, under the title: *Transports et Communications en Egypte en rapport à l'ouverture du Canal du Suez*.<sup>110</sup>

In June 1856, in Paris, Negrelli represented the Austrian government at the meeting of the International Commission, which chose his project as the best, the most suitable. Its technical worth followed from the conviction that there was no difference in level between the two seas, thus dispensing with the need for locks. The day after the final meeting, 26 June 1856, Negrelli summarised the debate and its outcome in a letter to Pasquale Revoltella: "As you know, my project was always for an open canal, free from hindrances, without locks and supplied by seawater. The English brought their own project. It was a raised canal, with water from the Nile and only accessible through six locks. The French wanted a canal like mine, but with two locks, one at each end. Holland too was inclined towards locks, but wanted to erect them as a precautionary measure only, and otherwise leave them free. The discussion was long and animated. The representatives of the English and French navies and the Sardinian minister Mister Paleocapa supported my idea, which was finally given preference and adopted by the commission. The programme is now complete, and we are preparing the details. Afterwards, we shall publish the general proceedings, and the Viceroy of Egypt will dispatch his Foreign Minister to Constantinople to obtain the exequatur of the Sublime Porte, with the backing of Austria and France. The affirmative vote by the British Navy is very important, because it will remove any unfavourable prejudice in England, invented only by the selfish and monopolistic spirit of Lord Palmerston".<sup>111</sup>

<sup>109</sup> The volume was published as a supplement to the weekly *Austria*.

<sup>110</sup> The book was published in Paris, *Journal des deux mers*, 1856. A second version also exists: *Des Moyens actuels de transport et de communication de l'Egypte par rapport au percement projeté de l'isthme de Suez – par M. le chevalier Negrelli - Moldelbe ingénieur*, Extrait du Journal Austria, Nr. XVII, Paris, 1856.

<sup>111</sup> Negrelli concluded by stressing his excellent relations with Lesseps and the positive

This correspondence clears up a series of points once subject to conflicting interpretations: the French and British navies' support for Negrelli's plan, despite the British government's aversion for the canal; the support of the Sardinian minister Paleocapa;<sup>112</sup> Lesseps's mediation and the fact that he was not at odds but on very friendly terms with Negrelli; and the crucial financial role of Austria, as described by Revoltella. The letters depict a situation in which virtually everything had been settled and all that was missing was Constantinople's ratification of the Austrian and French adherence to the project. The game was therefore practically over, as the accession of Austria and France simply had to be ratified by the Sultan.

Negrelli's project had prevailed over the others, and the International Commission had embraced it, as its official proceedings record: "We believe that the direct route, which we will briefly outline, meets all requirements as fully as possible and in every respect. We will justify this opinion by going into the project's details. We have to add that Mister de Negrelli devised the direct route in 1847 and that his studies of that time found a solution to the problem that is very similar to the one brought forward by the gentlemen Linant Bey and Mougel Bey".<sup>113</sup>

The same day, Negrelli repeated his observations to Revoltella, in a more informal manner, in a letter to his wife Lotti: "As I mentioned the other day, my canalisation system has been accepted [...] The commission members who travelled with me to Egypt will stay on, and together we will elaborate on the approved details. The representatives of the English and French navies, as well as Paleocapa

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reception he had received from the French notables (TMW, *Nachlaß* Negrelli, 12\_1336\_000, 26.06.1856).

<sup>112</sup> The *Nachlaß* bears no traces of a direct relationship between Paleocapa and Negrelli – just a single letter from the former to the latter (TMW, *Nachlaß* Negrelli, 13\_1407\_000, 6.4.1857), despite the fact that many historians have interpreted their collaboration as the meeting of minds between two Italian geniuses. Paleocapa did, however, appreciate Negrelli's work and defended it against Stephenson's criticism. P. Paleocapa, *Observations sur le discours prononcé par M. Stephenson, ingénieur, dans la Chambre des Communes* (Séance du 17 Juillet 1857), Paris, 1857.

<sup>113</sup> The commission's proceedings are in C. Dupin, *Canal maritime de Suez. Rapport à l'académie des sciences par M. le baron Charles Dupin*, Paris, 1857, pp. 1-2.

from Piedmont, vigorously supported my requests. Prussia did not say a word but signed everything along with me and therefore thinks of it as I do [...] I have always eaten at Lesseps', who also hosted a huge soirée for the dignitaries. They treat me like a brother".<sup>114</sup> The letter also shows how friendly Negrelli was with the other main participants in the enterprise. His long-standing efforts appeared to have been crowned with full success. In Vienna there was widespread optimism about the realisation of the project, as transpires from a lecture that the geologist Franz Foetterle coordinated in 1857 at the k.k. Geographical Society on behalf of a highly regarded committee that also included Negrelli.<sup>115</sup> The talk detailed all the steps of the planning process, identified the various protagonists of the different phases of study and survey, and recognised Negrelli's authorship of the project of the lock-free canal that the International Commission had adopted.

However, the last two years in the short life of the Tyrolean engineer, 1857 and 1858, were full of upheavals, owing to manifest opposition in England to the construction of the canal. Robert Stephenson, the former member of the Société d'Etudes, launched a virulent attack on Negrelli's project, and Lord Palmerston followed suit in the political arena.<sup>116</sup> Their objections were not technically justified (Negrelli believed that the tidal flow would prevent the canal from silting up). Instead, the politically motivated criticism originated largely from English governmental and financial circles, which were little inclined to give space or resources to the enterprise.<sup>117</sup> Pietro Paleocapa intervened in the debate to defend Negrelli, who also rebutted Stephenson's observations, in a courteous but firm manner, in two articles in Vienna's *Österreichische Zeitung*.<sup>118</sup>

<sup>114</sup> TMW, *Nachlaß Negrelli*, 12\_1336\_000, 26.06.1856.

<sup>115</sup> F. Foetterle (ed.), *Bericht über die Durchstechung der Landenge von Suez*, pp. 1-2.

<sup>116</sup> A. Birk, *Alois von Negrelli*, vol. II, pp. 279-284. T. Gatani, *Luigi Negrelli ingegnere trentino ed europeo*, pp. 274-277.

<sup>117</sup> Z.O. Algardi, *Luigi Negrelli l'Europa*, pp. 317-334.

<sup>118</sup> P. Paleocapa, *Observations sur le discours prononcé par M. Stephenson; L. Negrelli, "Negrelli contra Stephenson"*, in *Österreichische Zeitung*, n. 136, 18.06.1858. Id., "Negrelli

Luigi Negrelli did not live to see the work he had conceived and designed: he died on the 1st of October, 1858. Two months later Lesseps founded the Compagnie Universelle du Canal Maritime de Suez, which started excavation in 1859 and completed it in 1869.<sup>119</sup> Lesseps turned Negrelli's most ambitious project into reality, and a large body of literature unwarrantedly credits him with technical achievements that are properly the merit of the Tyrolean engineer.<sup>120</sup> Luigi Negrelli fell into oblivion until 30 years after his death, when his daughter Maria Grois sued the Compagnie Universelle du Canal Maritime de Suez and Lesseps' heirs, accusing the latter of having passed her father's project off as Lesseps' own.<sup>121</sup> The trial dragged on for years and although Negrelli's authorship of the design was recognised, the court did not award anything to his heirs. In any event, the case triggered a political-ideological competition between Italy and Austria, each of which claimed Negrelli as its own, giving rise to a series of misrepresentations that still persist today.<sup>122</sup>

## 10. Conclusions

The eventful life of Luigi Negrelli, his studies, and his *Weltanschauung* led him to seek a way of uniting different peoples, first of

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und Stephenson", in *Österreichische Zeitung*, n. 220, 26.09.1858. A. Birk, *Alois von Negrelli*, vol. II, pp. 264-293.

<sup>119</sup> On the construction of the huge work and the consequences of the canal's opening, see: N. Montel, *Le chantier du Canal de Suez*; H. Bonin, *Suez du Canal à la finance (1858-1987)*, Paris, 1987, pp. 23-163; Id., *History of the Suez Canal Company, 1858-2008 Between Controversy and Utility*, Geneva, 2010; A. Giuntini, *Le meraviglie del mondo*, pp. 109-147.

<sup>120</sup> W. P. Kirsch, *Luigi Negrelli Der Schöpfer des Suez Kanals. Ein Genie, seine Zeit, sein Leben und sein Wirken*, Vienna, 1971; Z.O. Algardi, *Luigi Negrelli, l'Europa*, pp. 334-350.

<sup>121</sup> See: F.A. Scaglione (ed.), *Luigi Negrelli e il canale di Suez*, vol. II and Z.O. Algardi, *Luigi Negrelli, l'Europa*, pp. 334-350.

<sup>122</sup> In 2018 the exhibition *L'épopée du canal de Suez. Des pharaons au XXI<sup>e</sup> siècle* at the Institut du Monde Arabe in Paris did not even mention Negrelli (G. Gautier (ed.), *L'épopée du canal de Suez. Des pharaons au XXI<sup>e</sup> siècle*, Paris, 2018; G. Gautier, C. Mollard (eds.), *L'épopée du canal de Suez*, Paris 2018. The articles in the Italian press on this exhibition rightly pointed out Negrelli's role but still labelled him "Italian". D. Fuganti, "Un'epopea lunga 164 chilometri", in *Archeo*, giugno 2018, pp. 90-91.

all within the multinational Austrian state, then in Europe and, last but not least, in different continents. The fact that this came at a time when the tendency was to highlight divisions rather than reasons for cooperation between different nationalities, cultures and languages makes his contribution all the more remarkable. Negrelli's work was not limited to providing high-level technical support for railway, road and hydraulic works; he transcended the boundaries of pure engineering and displayed a marked curiosity for the context in which his projects were to be set. This curiosity, expressed in pragmatic terms, prompted Negrelli to study the economic and organisational aspects of many projects for which he was responsible, in the belief that their effective utility and social importance were largely determined by those aspects.

Negrelli successfully combined the role of talented professional with that of upstanding official, despite obscure plots hatched against him while he was in Verona and from which, although cleared of all charges, he emerged profoundly disappointed.<sup>123</sup> He was always careful to distinguish strictly between private and public interests. The *Weltanschauung* that motivated him was a combination of the Christian values to which he had been exposed in childhood and the wealth of knowledge that he had drawn from the scientific and epistemological discussions of his time.

His own first-hand experiences led him to identify with the mechanisms of progress that society was creating and to offer a scientific contribution to the advancement of peoples in Europe and worldwide. Luigi Negrelli's greatest work, the study and project for the Suez Canal, represents the peak of a lifelong engineering career.

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<sup>123</sup> Ch. F. Deihsen, *Alois Negrelli Ritter von Moldelbe*, pp. 195-233.

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