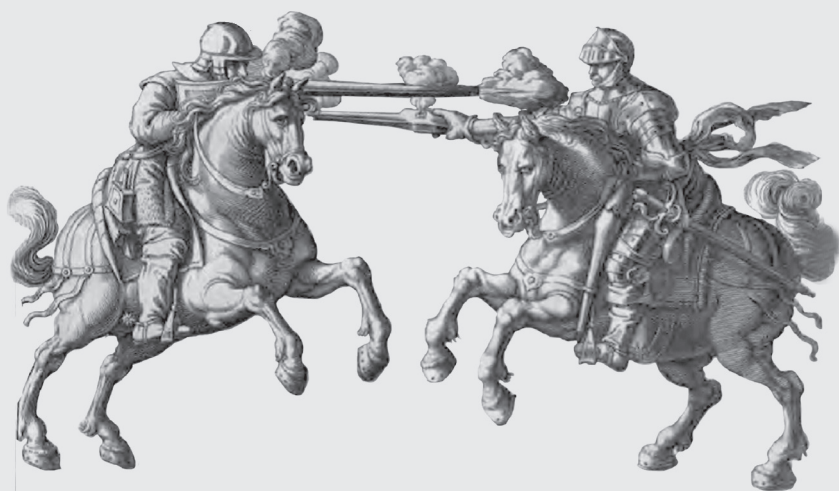


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Direzione, Via Bosco degli Arvali 24, 00148 Roma  
Contatti: [direzione@nam-sigm.org](mailto:direzione@nam-sigm.org) ; [virgilio.ilari@gmail.com](mailto:virgilio.ilari@gmail.com)

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([www.societaitalianastoriamilitare@org](http://www.societaitalianastoriamilitare@org))

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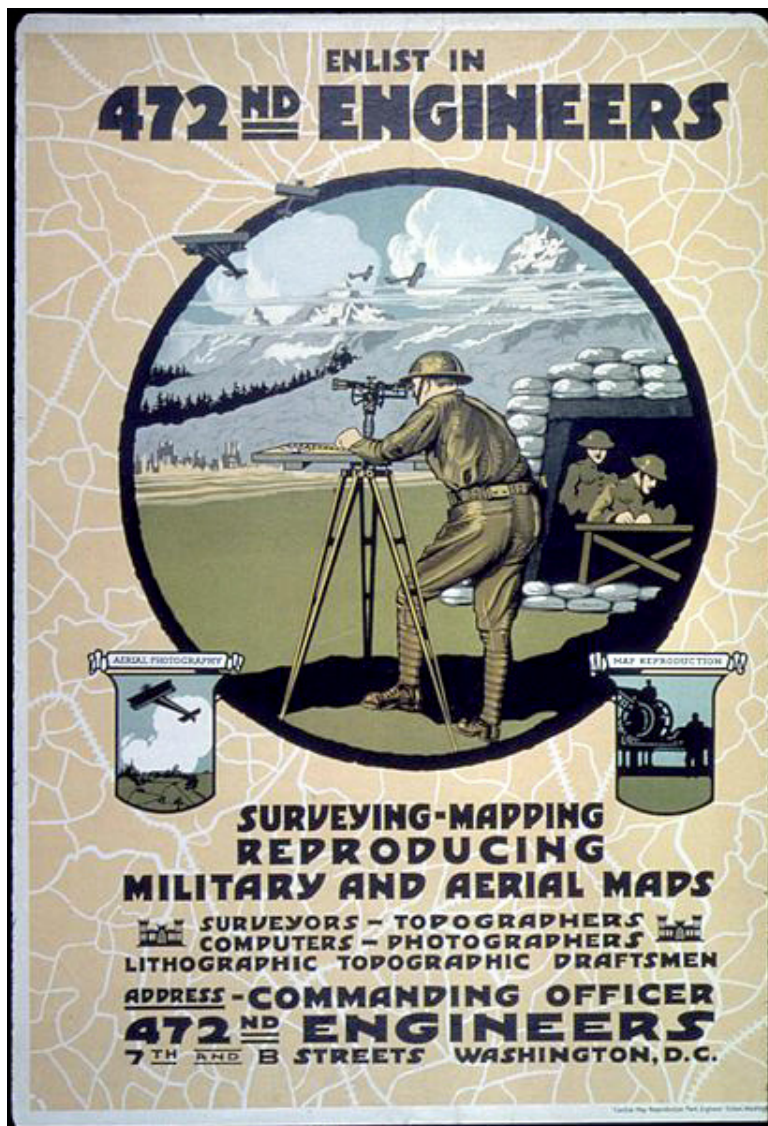
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# “A farm too far”.

## Maps at Waterloo

by EMANUELE FARRUGGIA

**ABSTRACT.** In 1778 Austrian General de Ferraris produced a map of the Austrian Netherlands for sale to the public. The latter and its French copy were the maps mainly used by the three armies at Waterloo. According to Belgian historian Bernard Coppens, a printing error on both the “Ferraris” and “Capitaine” maps might have misled Napoleon. Wellington took the decision to fight near Waterloo over a Ferraris map but the map he used during the battle was the outcome of a recent survey by the Royal Engineers. In Blücher’s Army, the crucial decision by Lt Gen von Gneisenau to withdraw towards Wavre might have also been due to the scarcity of large-scale maps among staff officers.

**KEYWORDS:** CARTOGRAPHY, MAP, SURVEY, SURVEYOR, SCALE, TRIANGULATION, SHEET, NETWORK, GEODETIC, PLAIN TABLE, ENGRAVED PLATE, CHOROGRAPHICAL, TOPOGRAPHICAL, CADASTRAL, LEGEND, GRADIENT, MANUSCRIPT, PRINTED, SKETCH, TRIGONOMETRIC, RECONNAISSANCE, REFLECTOR, ALIDADE, STAFF OFFICER.

**A**t the outbreak of the French Revolutionary Wars the two best-mapped countries in Europe were France, covered by the geodetic survey of the Cassini family, and the Austrian Netherlands, surveyed by Count Joseph Johann Franz de Ferraris (1726-1814), Director of the Austrian Artillery and then Feldzeugmeister.

In 1774, Ferraris produced a “Carte de Cabinet” of the Austrian Netherlands and of the Bishopric of Liege on a scale of 1: 11,520 in three copies - each consisting of 275 sheets - for Empress Maria Theresia, for the Governor, Charles of Lorraine and for the Imperial Chancellor, Prince von Kaunitz. In 1778, Ferraris published a “Carte Marchande”, in 25 sheets, on a smaller scale of 1:86,400, for sale to the public. In 1795, French cartographers Louis Capitaine (1749-1797) and Pierre Gilles Chanlaire (1758-1817) newly printed

the “Carte Marchande” in 69 sheets. The “Carte Marchande” of de Ferraris, its reduced versions and its French copy, the “Carte Capitaine”, were, thus, the maps mainly used by the three armies at Waterloo.

According to Belgian historian Bernard Coppens, a printing error on both the “Ferraris map” and the “Carte Capitaine” might have led Napoleon and his staff to mistake one farm for another causing a misperception of the real position of the village of Mont Saint Jean, the objective of the main attack of the French Army.

### 1 “*The legacy of Count Joseph Johann de Ferraris*”

In the 18<sup>th</sup> century, the Austrian Netherlands were the western outpost of the Habsburg hereditary lands and the first objective of any French offensive. During the War of Austrian Succession, the renowned cartographer Cesar François Cassini de Thury (Cassini III) carried out the triangulation of the northern part of the Austrian Netherlands. After the conclusion of the alliance between the Bourbon and the Habsburg monarchies (renversement des alliances), a French Colonel, Baron de Bon, was sent to Bruxelles to assist the Austrian Governor, Charles of Lorraine in surveying the country. In 1767, the Governor approved de Bon’s project of a large-scale map (1:14,000) and of a chorographical map of the same scale (1:86,400) as Cassini’s Grande Carte de France. In 1769, de Bon returned to Paris and was subsequently posted to Vienna as French Ambassador. The Governor then entrusted the project to Count Joseph Johann de Ferraris, the commander of the artillery in the Netherlands.

After approval by the Empress, in 1770, de Ferraris and his team of the K. u. K. Niederländischen National Feld Artillerie Corps began to survey the territories of the Austrian Netherlands and of the Bishopric of Liege. The outcome was a large-scale (1:11,520), polychromatic manuscript map (85 cm x 135 cm) in 275 sheets, a “Carte de Cabinet” for military purposes in three copies: one for Empress Maria Theresia, one for his brother in law, the Governor, and the last one for the Imperial Chancellor, Prince Wenzel Anton von Kaunitz.

A copy of the map was ceded by Austria to Belgium in 1922, under the terms of the Treaty of Saint Germain. It is now in custody at the “Bibliothèque Royale Albert I” and can be consulted on its website. The two re-

maining copies are kept at the Österreichische Nationalbibliothek in Vienna and at the Rijksarchief in The Hague. The *Carte de Cabinet* was the first, systematic large-scale map of Western Europe and it retains a historical value although it never had any practical use. In all likelihood, Ferraris’ survey - carried out using the plain table (“planchette”) - was not based on a triangulation network like Cassini’s geodetic one. Contemporary Differential Distortion Analysis performed on the scan of the *Carte de Cabinet* has ascertained significant distortions in comparison with the current topographical map of Belgium.



*General Count Joseph Johann Franz de Ferraris (1726-1814)*

In 1777, Ferraris published the *Carte Chorographique des Pays Bas Autrichiens* in 25 sheets, on a scale of 1:86,400. It was promoted as a continuation of Cassini’s map, thus ensuring its commercial success. Drafting the *Carte Marchande* Ferraris took into account part of Cassini’s triangles covering the Austrian Netherlands. In the areas bordering France, towns were shifted south to correspond with Cassini’s map. This expedient resulted in even larger distortions than the *Carte de Cabinet*. The “*Carte Marchande*”, which had adopted not only the same scale but also the same level of topographical details and legend as the *Carte de France*, was widely used by French and Allied commanders during the French Revolutionary and Napoleonic Wars.

A copy of the full-scale map, 25 dissected sheets, mounted on linen and contained in five contemporary paper slipcases, belonging to Marshal Nicolas Charles Oudinot<sup>1</sup>, was recently (2017) sold at an auction. General Gaspard Gourgaud (1783-1852), ADC of the Emperor, was in possession of the full-

<sup>1</sup> Barry Lawrence RUDERMAN, Antique Maps Inc, *Charte Chorographique des Pays Bas Autrichiens*, from the library of Nicholas Charles Oudinot raremaps.com, 2017.

scale Ferraris map during the 1815 campaign<sup>2</sup>. Mapmakers in other European countries put on sale further reductions of the Ferraris map, in one or four sheets. These maps were less bulky and cheaper than the full-scale Ferraris' and, therefore, more affordable for most officers, who had to procure them at their own expense. Of course, they were much less accurate than the originals used by senior commanders.

When the French Army first invaded Belgium in 1792-1793<sup>3</sup>, they took 400 copies of the map from a Brussels print seller. In 1794, with the second invasion, the French succeeded in getting the engraved copper plates and took them to the *Dépôt de la Guerre*. There, Engineers Louis Capitaine and Pierre Gregoire Chanlaire, produced the *Nouvelle Carte Chorographique de la Belgique publiée par L. Capitaine et P.G. Chanlaire Ingen.rs et Associée à la Carte générale de la France* in 69 smaller sheets (actually 64 map sheets), on the same scale. Napoleon used a copy of this map at Waterloo.

Capitaine, who also produced a reduced version in 24 sheets (1:345,600) of the Cassini's map of France (184 sheets), produced a smaller scale version of its map of Belgium in six sheets. Wellington and Blücher's staffs used copies of this version. In April 1815, the *Dépôt de la Guerre* distributed printed copies of the Capitaine map to the Generals with only minor updates. In conclusion, both the Ferraris and the Capitaine maps, which showed no significant difference between them, had not been updated in forty years.

## 2 *Napoleon's plan. Objective: Mont Saint Jean*

« Napoléon fut surpris lorsque le jour lui découvrit que l'armée anglaise n'avait point quitté ses positions et paraissait disposée à accepter la bataille. Il fit reconnaître ces positions par plusieurs généraux, et pour me servir des expressions de l'un d'eux, il sut qu'elles étaient défendues par une armée de canons et par des montagnes d'infanterie »<sup>4</sup>

As in many other domains, France was the leading power in Europe in cartography.

2 Henry HOUSSAYE, *1815*, Perrin et Cie, libraires éditeurs, Paris, 1899

3 Tim CLAYTON, *Waterloo, four days that changed Europe's destiny*, Little Brown London, 2014.

4 Fleury DE CHABULON, *Les Cent Jours. Mémoires pour servir à l'histoire de la Vie privée, du Retour et du Règne de Napoléon en 181*, Tome, C. Roworth, London, 1820



Over the 18<sup>th</sup> century, four generations of the Cassini family had accomplished the survey of the Kingdom of France, the first maps based on geodetic triangulation. César François Cassini de Thury (Cassini III, 1714-1784) and his son Jean Dominique Cassini (Cassini IV, 1748-1845) carried out most of the surveys between 1756 and 1789. The determination of the Paris meridian and the establishment of a single framework for all subsequent triangulations began in 1744 when King Louis XV ordered that a general map be drawn up. After 1756, the Cassini's family continued the work, which the Government had financed until the outbreak of the Seven Years War, as a private business. The scale of the maps was 1:86,400, or one ligne to 100 toises. The outcome was a set of 182 maps (actually 180 plates, 104 cm x 73 cm), that made up the Grande Carte de France, published between 1756 and 1815. After the Revolution, Cassini's legacy and the copper plates of the Grande Carte de France were taken over by the Dépôt Général de la Guerre et de la Géographie. For the sake of secrecy, the sale to the public of the Cassini's map was forbidden until 1815. In 1809 Napoleon, who had briefly served in the Bureau Topographique in 1795, re-established the Corps of the Ingénieurs Géographes. The Emperor directed the surveying efforts of the Dépôt towards the war theatres, from Spain to Russia.

In the field, Napoleon could rely on the support of the Imperial Headquarters<sup>5</sup>. The Headquarters were composed of the Army General Headquarters, under the Major General (Chief of the General Staff), and the Emperor's Military Household. The Cabinet was the core of the Military Household and its most important office was the Bureau Topographique de l'Empereur. The Head of the Topographical Office, from 1804 to 1814, had been Louis Albert Guislain Bacler D'Albe (1761-1824). Napoleon met D'Albe at the siege of Toulon. He followed Napoleon in almost all his campaigns. Due to the importance Napoleon always attached to geographical information, D'Albe became his closest collaborator.

Before the opening of any campaign and the night before the battle, D'Albe set the stage by showing his master the situation map that they closely

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5 Ronald PAWLY, *Napoleon's Imperial Headquarters (I) Organization and personnel*, Osprey, Oxford, 2004.

examined together<sup>6</sup>. D'Albe was always the first and the last man that Napoleon consulted and the one who enjoyed his full confidence. Once planning was defined, the Emperor would call for the Major General, Marshal Louis Alexandre Berthier - he himself an Ingénieur Géographe - who had the task to distribute the detailed instructions to the Corps commanders. During the "Hundred Days", Napoleon could not rely either on D'Albe, who remained in Paris as Director of the Dépôt de la Guerre, or on Berthier, who had followed Louis XVIII in exile and had died soon afterwards.

General Simon Bernard (1779-1839), an excellent officer of the Corps of Engineers, replaced Bacler D'Albe. Bernard, however, was not in confidence with his master like the old comrade in arms. Berthier's position had been assigned to Marshal Nicolas Jean-de-Dieu Soult, who had no experience whatsoever in staff work.<sup>7</sup>

Everybody in the Imperial Headquarters and in the rest of the Army had absolute faith in the legendary "coup d'oeil" of the Emperor<sup>8</sup>, his almost supernatural gift, in his own words, «of being able to see at a glance the possibilities offered by the terrain». Moreover, Belgium had been for 20 years a territory annexed to the French Empire, its population supposedly friendly to the French and some senior officers, like Marshal Soult, had fought in those very places in 1794.

In 2004, Belgian historian Bernard Coppens sparked a controversy among military historians by suggesting that printing errors, contained in both the Ferraris and Capitaine maps, might have led Napoleon and his staff to believe that the farm and the village of Mont Saint Jean were actually closer to their reach than they really were. Coppens' study was part of a comprehensive work on the rewriting of the narrative of the battle of Waterloo by Napoleon in Saint Helen<sup>9</sup>.

The Emperor, thanks to his undiscussed authority, apparently succeeded in re-writing the history of the 1815 campaign with the goal of shifting the

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6 David CHANDLER, *The Campaigns of Napoleon*, MacMillan, New York, 1966.

7 David CHANDLER, *Waterloo, The Hundred Days*, Osprey, Oxford, 1981

8 Gaspard GOURGAUD, *La Campagne de 1815, ou Relation des Opérations militaires qui ont eu lieu en France et en Belgique pendant les Cents Jours, Ecrite à Ste Hélène, Par le General Gourgaud*, Mongie Ainé libraire, Paris, 1818

9 Gaspard GOURGAUD, *Journal Inédit de Sainte Hélène*, Flammarion, Paris, 1899



*Carte Marchande de Ferraris*

responsibility of defeat on his subordinates: Ney, Soult and Grouchy.

Historical works published after the release, of the *Mémoires pour servir à l'histoire de France en 1815*<sup>10</sup>, generally took at face value the version the Emperor dictated, with hindsight, in Saint Helen, overlooking the first reports of the battle.

The book *Les Mensonges de Waterloo*<sup>11</sup> – and later updates<sup>12</sup> – is the outcome of such a thorough historical research based on: cross-examinations of texts written during and soon after the battle, map analysis and field reconnaissance. Actually, looking at: the operations order issued by Napoleon at 11 a.m. of June 18<sup>th</sup>.

« Une fois que l'armée sera rangée en bataille, à peu près à 1 h. après-midi,

10 Anonyme (Napoleon), *Mémoires pour servir à l'histoire de France en 1815*, Chez Barrois l'Ainé, libraire, Paris, 1820.

11 Bernard COPPENS, *Les Mensonges de Waterloo*, Jourdan Editions, Paris, 2009.

12 Bernard COPPENS, *Waterloo, l'Histoire Vraie de la Bataille*, Jourdan Editions, Paris, 2015

*au moment où l'Empereur en donnera l'ordre au Maréchal Ney, l'attaque commencera pour s'emparer du village du Mont-Saint-Jean, où est l'intersection des routes. A cet effet, les batteries de 12 du 2e corps, et celle du 6e se réuniront à celle du 1er corps. Ces 24 bouches à feu tireront sur les troupes du Mont-St.-Jean, et le comte d'Erlon commencera l'attaque, en portant en avant sa division de gauche et la soutenant, suivant les circonstances, par les divisions du 1er corps. Le 2e corps s'avancera à mesure pour garder la hauteur du comte d'Erlon. Les compagnies de sapeurs du Premier corps seront prêtes pour se barricader sur le champ à Mont-Saint-Jean » ;*

the *Bulletin de Laon* of June 20<sup>th</sup>,

*« A neuf heures du matin, la pluie ayant un peu diminué, le 1er corps se mit en mouvement, et se plaça, la gauche sur la route de Bruxelles, et vis-à-vis le village de Mont-Saint-Jean, qui paraissait le centre de la position de l'ennemi... Le comte d'Erlon attaqua alors le village de Mont-Saint-Jean, et fit appuyer son attaque par 80 pièces de canon... Une brigade de la 1re division du comte d'Erlon s'empara du village de Mont-Saint-Jean ... Cela fait, l'Empereur avait le projet de mener une attaque par le village de Mont-Saint-Jean, dont on espérait un succès décisif... Sur les huit heures et demie, les quatre bataillons de la moyenne garde qui avaient été envoyés sur le plateau au-delà de Mont-St-Jean pour soutenir les cuirassiers, étant gênés par sa mitraille, marchèrent à la baïonnette pour enlever ses batteries... » ;<sup>13</sup>*

as well as at the speech of General Antoine Drouot (1774-1847) at the *Chambre des Pairs* of June 23<sup>rd</sup>,

*« ... Le premier corps qui était en tête, attaqua et culbuta plusieurs fois la barrière-garde ennemie, et la suivit jusqu'à la nuit, qu'elle prit position sur le plateau en arrière du village de Mont-Saint-Jean .... Le premier corps dont la gauche était appuyée à la grand'route, attaquait en même temps les maisons de Mont-Saint-Jean, s'y établissait, et se portait jusque sur la position de l'ennemi... Il porte en avant toute sa garde ; ordonne à quatre bataillons de passer près le village de Mont-Saint-Jean, de se porter sur la position ennemie,... » ;<sup>14</sup>*

the Emperor and his staff might have mistaken the position of the village of Mont Saint Jean. It appears that, they put the village at the intersection of the road to Charleroi with the Chemin d'Ohain, where the farm of Mont Saint Jean actually is. In fact, Mont Saint Jean was, and still is, 1000 metres farther North, at the crossroads between the same road and the road to Nivelles.

A printing error on the Ferraris map (*Carte Marchande*) and of the corre-

<sup>13</sup> Le Moniteur Universel, Supplément extraordinaire au N° du 21 juin 1815

<sup>14</sup> Le Moniteur Universel, N° du 24 juin 1815

sponding Capitaine map shows the position of the farm of Mont Saint Jean on the western side of the main road from Charleroi to Brussels, whereas it lays on the eastern side. That error, not present on the original manuscript Ferraris map, might have been the cause of the misperception of the real position of the village.<sup>15</sup> On top of it, by systematically reading the papers, one can realize that Napoleon and his officers looked at the farm of La Haye Sainte, situated farther South, as part of the village of Mont Saint Jean. Two British officers, Captain Arthur Gore :

*«This battle has obtained three different names from the following causes: - It is called .... Of Mont Saint Jean, by Napoleon: through error, from his having mistaken the farm of la Haie Sainte for that of Mont Saint Jean»<sup>16</sup>;*

and Captain John Booth:

*«It is evident that here, as in other French accounts, Mont St. Jean is put for la Haye Sainte. Mont Saint Jean was in the rear of the British position and no French soldier came within half a mile of it»<sup>17</sup>*

had already noticed such a mistake in their books on the battle, published in 1817.

Coppens' theory has been subject to strong criticism, mainly because it was widely publicized in the general press and on French television and presented as “the mistake” that brought about Napoleon's downfall. Dutch historian Pierre de Wit, in particular, contested Coppens' argument on several grounds. Among his many objections on the issue of the mistake in map reading by Napoleon and his staff, de Wit stressed that :

*«...by shifting the position of both the village and the farm of Mont Saint Jean further south, one runs into serious trouble in explaining what the other buildings along the chaussée would be. What is La Belle Alliance, and does Trimotion become La Haye Sainte and does Rossomme become Le Caillou? Even if the so-called incorrect interpretation could have taken place, it is simply impossible in the total context of the other features of the area, let alone the fact that there is no reason to doubt the ability of Napoleon and his staff in reading a map ».<sup>18</sup>*

Moreover, according to de Wit,

<sup>15</sup> Both maps are available on Coppen's website, 1789-1815.

<sup>16</sup> Arthur GORE, *A Historical Account of the Battle of Waterloo*, T. Parkin, Brussels, 1817.

<sup>17</sup> John BOOTH, *The Battle of Waterloo, also of Ligny and Quatre Bras*, Military Library, Whitehall, London, 1817.

<sup>18</sup> Pierre DE WIT *A case of confusion*, on the website: Waterloo Campaign, 22 April 2012 .

« the way both the bulletin and Drouot use the name Mont Saint Jean can only be mere carelessness and has no deeper meaning, other than possibly making things larger as they really were so as to ease the pain of defeat».<sup>19</sup>.

The printing error on both maps (Ferraris and Capitaine), however, is not sufficient, in itself, to explain such a misperception. Reconnaissance should have been poorly executed if no one had been able to identify the buildings marked on the maps. In fact, the Emperor did not make the usual, thorough reconnaissance of the battlefield himself but relied on others to do it, like Lieutenant General François-Nicolas-Benoît Haxo (1774-1838), commander of the Engineers. Haxo did not notice any entrenchments in the British positions, such as the Chateau of Gomont<sup>20</sup> and the farm of La Haye Sainte.

There was no “situation map” on the table, with enemy positions clearly marked and distances estimated, at the temporary headquarters of the farm of Le Caillou, as Bacler d’Albe used to arrange the night before the battle. Maps were simply spread out on the table both at the breakfast meeting at 8.a.m. and later at the Rossomme observation point. The view from the different observation points he used during the battle did not allow Napoleon to appreciate the depth of Wellington’s position and, definitely, he could not see neither the farm of Mont Saint Jean nor the village itself. Evidence of superficial reconnaissance can also be detected by the absence of any reference to the Chateau, but only to the wood of Gomont, both in the *Bulletin de Laon* and in Drouot’s speech. It looks like as if Napoleon’s staff had sent the troops into the wood without taking into account the well-fortified building, clearly marked on both maps.

The farm of La Haye Sainte was the key outpost right before the centre of Wellington’s defensive position and the only farm on the main road to Brussels visible from Napoleon’s observation points. According to Napoleon’s plan, that required smashing through Wellington’s centre and seizing Mont Saint Jean<sup>21</sup>, La Haye Sainte should have been one of the main targets of the bombardment by the Grand Battery. According to historical research, based

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19 *ibidem*.

20 The real name of the Castle (Chateau) and, by extension, of the wood, was Gomont or Goumont. The name Hougomont, mentioned in dispatches and reports published after the battle, was due to an orthographic error on the manuscript Ferraris map.

21 NAPOLÉON, *Correspondance de Napoléon Ier, publiée par ordre de l’Empereur Napoléon III, Tome XXVIII et XXXI*, Henri Plon-J.Dumain, Paris, 1870



on the compared analysis of different reports<sup>22</sup>, the fire of the Grand Battery of almost 62 guns and howitzers was not aimed, direct fire. Most likely, the massed artillery under the command of Brigadier General Victor-Albert Des-sales (1776-1864), fired a barrage, at an elevation of one or two degrees, on an area target of 1,000 metres by 500 metres, where most of the Allied troops were deployed.

Strangely enough, Wellington did not realize, until it was too late, the key, tactical value of La Haye Sainte. The farm had been hastily fortified by its defenders, the heroic 2<sup>nd</sup> Light Battalion of the King's German Legion under the command of Lieutenant Colonel Georg Baring (1773-1848), the same morning of the battle. On the other hand, it was 3 p.m. when the French launched the first assault on the farm, following the explicit order of Napoleon to Marshal Michel Ney, only to be pushed back by Baring's riflemen<sup>23</sup>. At 5.30 p.m., Napoleon ordered to take the farm "at any cost" and Ney led the final attack personally. At 6.15 pm the farm fell, after Baring was forced to withdraw, having been left without ammunition. Now victory seemed to be at hand for the French. However, it was not, it was just a farm too far.

### *3 Wellington's map: stained with the blood of Lt Col William Howe de Lancey*

*«All the business of war and, indeed all the business of life, is to endeavour to find out what you don't know by what you do; that's what I called 'guessing what was at the other side of the hills'»<sup>24</sup>*

This well-known Wellington's sentence is a reminder of the emphasis he put on reconnaissance and accurate surveying of the battlefield.

Whereas the first triangulation work in Britain first began in peacetime (1784), the French threat of invasion accelerated the work and a one inch to the mile (1: 63,360) map of Kent was published in 1801. In 1799, a French

22 Gareth GLOVER, *The Grand Battery, The Latest Evidence*, projecthougoumont.com, 2018 .

23 Brendan SIMMS, *The Longest Afternoon, the 400 men who decided the battle of Waterloo*, Penguin, London, 2014.

24 John Wilson CROKER, *The Croker Papers: the correspondence and diaries of the Late Right Honourable John Wilson Croker; LLDm F.R.S. Secretary of the Admiralty from 1809 to 1830*, John Murray, London, 1885.



émigré, General François Jarry de Vrigny de la Villette (1733-1807), appointed topographical instructor at the Royal Military College at High Wycombe, introduced the technique of “relative command” – the use of numbers to indicate the height of the ground – in topographical mapping. The Royal Engineers in drafting the so-called “Waterloo Map” also used the technique, which preceded the adoption of contours by the late nineteenth century. Gradients were also shaded with particular coloured densities and cross-hatching used to represent slopes, as it was the case in the “Waterloo Map”<sup>25</sup>.



Colonel Sir William Howe De Lancey  
(1778-1815)

A further contribution to British Cartography is due to the endeavours of Robert Edward Clifford (1767-1817), a Roman Catholic English nobleman and former officer of an Irish Regiment (Dillon’s Regiment) of the French Royal Army. In 1792, Clifford came back to Britain and drafted a series of “Skeleton Maps” of the English coastline under the supervision of the Commander of the Western Division, General John Graves Simcoe (1752-1806). In the short timeframe between the Peace of Amiens in 1802 and the renewal of hostilities in 1803, Clifford, sent on a covert mission to France, smuggled out of the Bibliothèque Nationale of Paris a trunk filled with 90 kilograms of military maps, mainly of fortresses and fortified cities.<sup>26</sup>

During the Peninsular War<sup>27</sup> Wellington’s surveyors provided him with

25 Jeremy BLACK, *Maps of War: mapping Conflict through the Centuries*, Bloomsbury, London and New York, 2016.

26 William RAVENHILL, *The Honourable Robert Edward Clifford, 1767-1817: A Cartographer’s Response to Napoleon*, *The Geographical Journal*, Vol. 160, No. 2 (Jul., 1994), pp. 159-172.

27 Mark THOMSON, *Wellington’s Engineers: Military Engineering in the Peninsular War*, Pen and Sword, Croydon, 2015

better maps than the French. Officers of the Quartermaster General Department and of the Royal Staff Corps, both under the orders of General George Murray (1772-1846), undertook most topography and reconnaissance work.<sup>28</sup> Moreover, Wellington's staff officers could avail themselves of a mobile lithographic printing press to reproduce the maps.

Although Wellington's Army of 1815 was not like the war machine of the Peninsular War, a team of 10 Royal Engineers officers under Lieutenant Colonel John Carmichael Smyth (1779-1838) had already begun, in 1814, a survey of the Belgian provinces. The task, at the time, had a low priority and much of the work was done after Napoleon's comeback, in March 1815. The overall map (of an irregular size of 146,5cm x 107,4 cm)<sup>29</sup> – nowadays on display at the Royal Engineers Museum<sup>30</sup> - is a combination (“a Frankenstein map”) of 10 sketches surveyed separately, at different times.

The entire area of the map covers 120 square miles. The scale is approximately one inch to the mile (1:63,360). The area of the map with the greater level of detail covers the area west of Hal, where Wellington expected the main thrust of the French Army to come from. The orientation of the map is due North-South and it includes: Hal, (NW corner); Genappe (SE corner); Nivelles in the South centre; the area around Mont Saint Jean, where the battle was fought, is in the NE corner. Pencil marks, indicating the position of the troops, along the ridge north of La Haye Sainte, are still visible today.

The way the map reached the Duke and his Deputy Quartermaster General, Lieutenant Colonel William Howe De Lancey (1778-1815), is an adventurous tale in itself where sheer luck played a role. The Engineers had previously drawn a fair copy of the map for the Prince William of Orange, in his quality of Commander in Chief before Wellington's arrival. On June 16<sup>th</sup>, with fighting starting at Quatre Bras, the Duke called for “the map”. Due to time constraints, Captain John Oldfield (1789-1863) pasted together the original manuscript sketches and entrusted them to Lt Marcus Antonius Waters (1793-1868), who rode to Wellington's HQ in Quatre Bras. The courier, however, was involved in a *mélée* with some French cavalry and unhorsed. Therefore,

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28 Richard H. P. SMITH, *Getting Lost and Finding the Way*, Napoleon Series, 2015.

29 James Scott, *Napoleonic Wars Forum*, contribution, Oct. 17, 2013.

30 The map can be consulted on the website of the Royal Engineers Museum.

he lost his horse and the map in the portemanteau (saddlebag) as well. By sheer luck, Waters located his horse - as reported by Oldfield<sup>31</sup>– «*quietly destroying the vegetables in a garden near the farmhouse at Quatre Bras*». Once delivered to Wellington, he gave the map to Deputy Quartermaster General Lt Col De Lancey. De Lancey, however, is credited to have allocated the troops' positions «*to the rear, apparently, of the ground originally chosen by the Duke*»<sup>32 33</sup>. The heroic De Lancey was mortally struck by cannonball during the battle and stains of his blood are still visible on the map. Walter Scott, who had a look at the map in 1816, described it as stained with De Lancey's blood. Oldfield recovered the map and passed it over to Carmichael Smyth. It remained at his residence until his death, in 1860. It finally landed in the Royal Engineers Museum in 1921.

Wellington, however, had already selected the site of Mount Saint Jean as a suitable defensive position the year before, on his way to the Vienna Congress. He personally reconnoitred the area again in 1815 but, reportedly, took the crucial decision on where to stand and fight on the sidelines of the ball (June 15<sup>th</sup>) of Charlotte Lennox, Duchess of Richmond (1768-1842), celebrated by William Makepeace Thackeray in “Vanity Fair”<sup>34</sup>. Asked by Wellington to have a look at the map after receiving fresh news of the French advance, Charles Lennox, Duke of Richmond (1764-1819) spread out his map on the bed of his dressing room. After Wellington famously said: «*Napoleon has humbugged me*», Richmond asked him what he intended to do. Wellington replied, «*I have ordered the army to concentrate at Quatre Bras, but we shall not stop him there, and, if so, I must fight him here*», placing his thumbnail on

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31 John OLDFIELD, *Waterloo Memoirs dated July 1815*, in Gareth Glover (ed.). *The Waterloo Archive Volume VI, British Sources*, Barnsley: Frontline, 2014.

32 S.G.P WARD, *Lancey, Sir William Howe de*, *Oxford Dictionary of National Biography*, Oxford University Press, Oxford, 2008

33 Herbert Taylor SIBORNE, *Waterloo letters : a selection from original and hitherto unpublished letters bearing on the operations of the 16th, 17th, and 18th June, 1815, by officers who served in the campaign (Letter No 71 by Sir Hussey Vivian)*, Cassell and Company Ltd, London, 1891

34 William M. THACKERAY, *Vanity Fair*, Complete & Unabridged, Collectors Library, London, 2006 (“*...A certain ball which a noble Duchess gave at Brussels on the 15<sup>th</sup> of June in the above-named year is historical..*”)

Waterloo.<sup>35</sup> Richmond preserved the map, a Ferraris one,<sup>36</sup> as a precious relic until the end of his days. Unfortunately, the map was lost after his death in Canada, in 1819, where he was serving as Governor General of British North America.

Two days after the battle, Oldfield along with Captain Alexander Thompson and Lt Francis Gilbert went on a new survey of the battlefield, among the piles of corpses and the wounded still laying on the ground, to draw a map that illustrated the deployment of the French and British armies. The first sketch of the battle (a sheet 36,9 cm x 41,3 cm) was in the hands of Carmichael Smyth on July 11<sup>th</sup>, in Paris. It was reproduced soon afterwards using a portable printing machine. Two versions of the original sketch survive, one in the National Archives and one purchased by a British private collector.<sup>37</sup>

#### 4 *Blücher's Army: the dawn of the Prussian general staff system*

«Diese höchst eigentümliche Schwierigkeit muß eine eigentümliche Geistesanlage besiegen, welche mit einem zu beschränkten Ausdruck der Ortsinn genannt wird. Es ist das Vermögen, sich von jeder Gegend schnell eine richtige geometrische Vorstellung zu machen und als Folgedavon sich in ihr jedesmal leicht zu rechtzufinden».<sup>38</sup>

According to Carl von Clausewitz the “Ortsinn” that we may translate into “sense of locality” (or, maybe, “topographical awareness”), must be a fundamental quality of the field commander. His experience as chief of staff of the third Army Corps at Ligny and Wavre<sup>39</sup> may have brought him to this conclusion. Cartography in the Kingdom of Prussia began in earnest after the Seven Years War.<sup>40</sup> Notwithstanding the hostility of Frederick the Great,

35 The Right Hon. The Earl of MALMESBURY, *A series of Letters of the First Earl of Malmesbury, His family and friends from 1742 to 1820, (Captain Bowles to Lord Fitzharris, Nivelles., June 19<sup>th</sup>, 1815)*, Richard Bentley, London, 1870.

36 F.DE BAS, J DE T'SERCLAES DE WOMMERSON, *La Campagne de 1815 aux Pays Bas d'après les rapports officiels néerlandais Tome I, Quatre Bras*, Librairie Albert Dewit, Bruxelles, 1908

37 The map can be consulted on the website of the Royal Engineers Museum

38 CARL VON CLAUSEWITZ, *Vom Kriege, Hinterlassenes Werk des Generals Carl von Clausewitz*, F. Dümmler, Berlin, 1832

39 CARL VON CLAUSEWITZ, *Der Feldzug von 1815 in Frankreich*, F. Dümmler, Berlin, 1835

40 Lothar ZÖGENER, *Preußen amtliche Kartenwerke im 18.und.19. Jahrhundert*, Berlin, 1981

Count Friedrich Wilhelm Carl von Schmettau (1743-1806) began, in 1767, to survey the Prussian provinces situated to the East of the river Weser. In twenty years (1767-1787) Schmettau produced 270 sheets, 97 cm x 64cm (*Schmettaueschen Kartenwerk*) on a scale of 1:50,000. The maps, classified as a State secret, included neighbouring areas at the border. The surveyors used geodetic techniques including triangulation as of 1796. In East Prussia, under the direction of State Minister Baron Friedrich Leopold von Schrötter (1743-1815), the survey produced maps in the scale of 1:50,000 and on the smaller scale of 1: 150,000. In the Western provinces,<sup>41</sup> a group of 24 officers of the Observation Army carried out the survey, from 1796 to 1805, under the leadership of General Karl Ludwig von Le Coq (1754-1829)<sup>42</sup>. The team, which included Baron Friedrich Carl Ferdinand von Müffling (1775-1851)<sup>43</sup>, at the time a young lieutenant, adopted the 1:86,400 scale of Cassini's and Ferraris' maps to draw the “Great Map of Westphalia”, in 20 sections. As Prussian cartography was pushing westward, French cartography was advancing eastward. In 1802, Napoleon appointed Colonel Jean Joseph Tranchot (1752-1815) “Chef du bureau topographique de la carte des quatre Départements réunis de la rive gauche du Rhin”. Napoleon's aim was to extend Cassini's chorographical map to the newly annexed departments. The Emperor, visiting Tranchot's Office in 1804, dismissed the maps on a scale of 1:10,000 that Tranchot showed him, as “cadastral” plans. The subsequent (1809), 1:100,000 chorographical map, did not meet his wishes either; the Emperor noticed that the map was on a larger scale than Cassini's. In 1814, Tranchot had almost completed his task when he received from Paris orders to close shop in Trier and come back with all the maps to the Dépôt de la Guerre. The Prussians, already after the first Peace of Paris, tried to get hold of Tranchot's maps and engraved plates. Colonel Bacler d'Albe, who was running the Dépôt at the time, succeeded in concealing and dispersing the highly sensitive material. In

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(bearbeitet : H. Klieblock)

41 Marie-Luise CARL, *Der Hintergrund zur Kartenaufnahme der Rheinlande durch Tranchot und von Müffling im Spiegel einer Inschrift*, Erkrath, 2002-2005.

42 Martin KLÖFFLER, *Kartographie im Rheinland*, in G. VON BÜREN, M. D. GUTBIER (hrsg), *Das Preußische Jahrhundert –Jülich, Opladen und das Rheinland zwischen 1815 und 1914*, Jülicher Forschungen, Goch, 2016.

43 Friedrich Carl Ferdinand Freiherr VON MÜFFLING, *Aus meinem Leben*, Mittler, Berlin, 1855.

the spring of 1815, Müffling was stationed in newly annexed Rhineland, as chief of staff of the Prussian Observation Army. He was planning to complete Le Coq's survey and to extend it to the left bank of the Rhine and eastward, toward Thuringia, when hostilities resumed. After the Waterloo campaign, where he played the key role of Prussian liaison officer at Wellington's Headquarters, Müffling obtained, with the Second Peace of Paris, the highly coveted Tranchot's maps. The quality of the work of Tranchot's team deeply impressed Müffling who completed the survey of Rhineland in 1818. The officer who led the topographical office in Coblenz, Major von Knackfuß actually based his survey of the left bank of the Rhine on Tranchot's accurate maps.

Maps in use in the Prussian Army during the Wars of Liberation<sup>44</sup> were mostly the commercially available ones, which the officers - including Corps commanders - bought at their own expense. The scale of the chorographical maps (Generalkarten) was 1:86,400. For Blücher's Army the relevant maps were the "Ferraris" for Belgium and the "Cassini" for France. To these maps we have to add smaller scale ones, mainly 1:1000,000 (Postroutenkarten), very often taken out of travel guides. Widely used among staff officers were reductions of the "Ferraris" map like the "Nouvelle Carte des Pays Bas reduite d'après celle de Ferraris", in one sheet (53x72 cm) published in Brussels, owned by Lt Col Ludwig von Reiche (1775-1854)<sup>45</sup>, chief of staff of the first Army Corps under General von Ziethen. Staff officers, however, should be able, if so required, to produce a larger scale (1:14,000) map for special purposes ("Spezialkarte") or to enlarge an available map to include topographical details surveyed on the spot, relying on the ability of their specialized officers, the "Ingenieurgeographen". Due to the scarcity of topographical maps and to their lack of detail, it was often necessary to resort to indirect measurement of distances (such as the width of a river or the distance of enemy positions). The surveyors resorted to simple trigonometric calculus using ranging rods and reflecting instruments such as octants, sextants and surveying sectors. The instrument of choice in the field was, however, the reflector (or reflecting alidade).

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44 Martin KLÖFFLER, *Der Preußische Generalstab in den Befreiungskriegen 1813-15*, Napoleon online, Düsseldorf, 2014.

45 Ludwig VON REICHE, *Memoiren des königlich preußischen Generals der Infanterie Ludwig von Reiche von 1814 bis 1855*, Brockhaus; Leipzig, 1857.

One of the defining moment of the campaign of 1815 was the crucial decision taken by the Chief of the General Staff, Lt Gen Count August Neidhardt von Gneisenau, in the aftermath of Ligny, to concentrate the different Corps of Blücher’s Army in and around the small town of Wavre<sup>46</sup>. Contrary to Napoleon’s expectations, the defeated Prussian Army changed his supposed line of withdrawal towards Liege and moved instead northward in order to join Wellington’s Army. The circumstances of Gneisenau’s choice were quite peculiar. In the evening of June 16<sup>th</sup>, the Prussian Army had just



Feldmarschall August Wilhelm Antonius Graf Neidhardt von Gneisenau (1760-1831)

been beaten by Napoleon and his Commander, Field Marshal Gebahrd Leberrecht, Prince von Blücher, was missing, after leading a cavalry charge. According to what von Reiche wrote in his memoirs, Gneisenau’s initial order was to let the I and II Corps withdraw to the area around the village of Tilly. Meeting Gneisenau on the Roman Road (leading by Gembloux on Maastricht and Liège), Reiche pointed out that Tilly was not marked on his reduced version of the “Ferraris” map. Since the staff officers of the other Corps presumably had the same map, he respectfully suggested the small town of Wavre, which was clearly marked on it, as the end of the line of withdrawal. The

<sup>46</sup> Karl von DAMITZ, *Geschichte des Feldzugs von 1815 in den Niederlanden und Frankreich als Beitrag zur Kriegsgeschichte des neuen Krieges*, E.S. Mittler, Berlin, Posen und Bromberg, 1837.

extension of the line to a farther point would have reduced the risk of error in map reading. Glancing at his own map, in the light of candles, Gneisenau recognized that Reiche had a point and issued the order to withdraw not only to Tilly but to regroup around Wavre. Under his orders, staff officers, like Reiche, rode all night to lead the troops in the right direction. Surrounded by a wooded environment and in the midst of awful weather conditions, Reiche admitted he had to rely heavily on his pocket compass (*Taschenkompaß*) for orientation. By the evening of June 17<sup>th</sup>, the whole Army was concentrated around Wavre.

Reading Gneisenau's report, written on June 17<sup>th</sup>, the withdrawal of the right flank of the Army (I and II Corps) to Tilly and Gentinnes, in the night of June 16<sup>th</sup> and the subsequent movement on the road to Wavre, seem to have been the logical consequence of his firm intent to keep the Army close to Wellington's in order to provide the help he had requested and jointly defeat Napoleon.<sup>47</sup> It seems also that, in absence of a pre-established line of withdrawal, the troops had already started to retreat, mostly northwards, on the road to Wavre but many (8,000) also eastwards, towards Namur.<sup>48</sup> Therefore, Von Reiche's suggestion, prompted by the actual scarcity of large-scale maps among staff officers, may have played a role in Gneisenau's successful transformation of a rout into an orderly withdrawal that, ultimately, led to victory.

The Prussian general staff system, brought to perfection in the era of von Moltke<sup>49</sup>, was already in action in the frantic days of the Waterloo campaign. The "geleherte Offiziere" in Blücher's Army (Gneisenau, Grolmann, Reiche, Valentini, Clausewitz, Steinmetz), outperformed in every respect their opposite in the French staffs, displaying a degree of flexibility that Napoleon's war machine had apparently lost. It is no chance that most of them, including Müffling, were expert topographers.

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47 Karl Rudolf VON OLLECH, *Geschichte des Feldzuges von 1815 nach archivalischen Quellen*, Mittler, Berlin, 1876

48 Peter HOFCHRÖER, *Waterloo 1815. Wavre, Plancenoit and the Race to Paris*, Pen & Sword Military, Barnsley, 2006

49 Peter HOFCHRÖER, *Prussian Staff & Specialist Troops 1791-1815*, Osprey, Oxford, 2003





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