

# Cerdà and the First Barcelona Metropolis, 1853 -1897



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Edited by Marina López Guallar



Ajuntament de Barcelona

**MUHBA** MUSEU D'HISTÒRIA  
DE BARCELONA



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The inseparable link between Ildefons Cerdà and Barcelona is well known, but little documented. It has taken more than a century for Cerdà's life's work to become the subject of serious research and detailed studies. *Cerdà and the First Barcelona Metropolis, 1853-1897* sets out to illustrate a period in which the city was completely transformed by a man whose legacy can still be traced in the intricate layout of modern metropolitan Barcelona.

The second half of the 19th century was one of the most important periods in the modernisation of Barcelona, resulting in the demolition of its city walls, the addition of numerous outlying towns, and the wholesale renovation and extension of the city.

This exhibition, organised by Barcelona History Museum, shows us the complexity underlying Cerdà's pioneering master plan and the bristling energy of an urban society undergoing massive social and economic change. The industrial revolution sped up these processes, which would ultimately lead to the breaking down of the barriers that had thus far constricted the city's growth and development. Cerdà wanted a more modern city, bigger in the broadest sense of the word; a Barcelona where people could lead a better, fuller life.

And it is because of Cerdà's unyielding ambition to plan for Barcelona's future that he will be forever associated with the city. His achievements enabled Barcelona to seize the reins of progress and become part of a more human model. With all the inevitable flaws of the evolution of a city – partly conceived by him –, the most conclusive proof of its modernity is that, 150 years on, Barcelona remains a truly unique city, a living example of transformation throughout its history.

Jordi Hereu  
Mayor of Barcelona

The exhibition *Cerdà and the First Barcelona Metropolis, 1853-1897* is a faithful treatment of the leading figure in a movement that went far beyond the sphere of town planning to transform our city in a way that has endured in time.

The main catalyst of this transformation was the plan to renovate and extend the city, a deep-rooted aspiration of the Barcelona society of the time. There is no doubt that the complexity of the project and the competing interests of a number of different institutions did not make decision making any easier; in fact, quite the opposite. The exhibition allows the viewer to glimpse a less well-known aspect of Cerdà's career, namely, that of the pragmatic manager of the first stages of the Barcelona extension, who undertook all the technical work required to put the approved project into action.

The process of growth of Barcelona and the need to control the metropolitan expansion are also key elements of the exhibition, and another key figure who led the project to make the city a great European capital emerges: Rius i Taulet, four times mayor of the city. The University, Ciutadella Park and the 1888 Universal Exhibition are clear examples of that ambition.

For a whole year and until June 2010, Barcelona will host a number of cultural activities to commemorate a key moment in its transformation as a city. This exhibition at Barcelona History Museum is a living testament to the importance of Ildefons Cerdà's Extension Plan, approved a century and a half ago. It is fascinating to see how, throughout its history, the city has had the courage to be an engine for change, just as it continues to be today.

Jordi Martí  
Culture Delegate

Ildefons Cerdà's contribution to town planning in general and the urban development of Barcelona in particular is undeniable. Now that a century and a half has passed since the Barcelona Extension Plan was approved, the Sociedad Estatal de Conmemoraciones Culturales (SECC), an affiliate of the Ministry of Culture, has decided to honour the work of the Catalan engineer. And so, in 2009 we published the facsimile of this *Plan of the surroundings of the city of Barcelona and project for its renovation and extension*, and in 2010 we have jointly organized with Barcelona History Museum the exhibition *Cerdà and the First Barcelona Metropolis, 1853-1897*, the subject of this catalogue, and the congress *Cerdà Postmetropolis. The government of metropolitan regions in the 21st century*.

A century and a half after the Extension Plan was approved, in 1859, few people would venture to question the great work of Ildefons Cerdà and its contribution to the transformation of a city. Barcelona ceased to be a mediaeval fortified town and became a modern industrial city. The project was the natural response to a long-held aspiration to address the overriding need to reorder and extend the Catalan capital.

Although he was the object of criticism from some of his contemporaries, today all voices, including those of architects, sociologists, town planners and art historians, as well as the man in the street, unanimously recognise Cerdà's achievement in conceiving a truly innovative approach to urban planning. Moreover, he laid the foundations for Barcelona to move towards modernity, and successfully meet the challenges that would arise over the ensuing 150 years.

This exhibition traces the processes that culminated in the Cerdà Plan. It begins with a treatment of the preliminary debates about the challenges involved in the demolition of the walls which still hemmed in the city in 1854. The exhibition then moves on to show the intense competition that ensued for ideas on how best to carry out the extension of Barcelona. Next it presents the consequences of that competition: the tensions that arose between the local and central administrations when it came to deciding on the most suitable project; the struggle between the public and private interests to gain command of the execution of the plan designed by Ildefons Cerdà; and, lastly, the influence of the Barcelona experience on other cities' extension plans, based on research done in recent years. The exhibition closes with a look at the process of municipal unification undertaken by Mayor Rius i Taulet.

Integrating the whole area encompassed by the Cerdà Plan into Barcelona was indispensable for its success, despite the many tensions it aroused.

Cerdà and the solutions he offered for Barcelona open the way to continuing with the necessary urban renovation programmes, as vital today as they were back then. The special care which the exhibition's curator, Marina López, has taken can be appreciated in the selection and arrangement of each of the pieces in the show. I offer my sincerest congratulations to everyone on the work they have done and on the end result. I would also like to thank the City Council and the Barcelona History Museum for their efficiency and professionalism, which have once again enabled us to bring a joint project to a successful conclusion. And, finally, I would like to thank all the people who have helped to make this exhibition a reality.

Soledad López  
President  
Sociedad Estatal de Conmemoraciones Culturales

## Foreword

The transformation of Barcelona in the mid 1800s had until quite recently passed relatively unnoticed by scholars of European urban history: for many it was difficult to imagine that a city so far from the centres of modernisation on the continent could offer such remarkable potential.

The city had managed to keep its position in the European urban network during the modern age and showed enough cohesion to overcome in 1714 the adverse results of the Spanish War of Succession, and had now placed itself at the forefront of the manufacturing cities throughout the 1700s. Moreover, in the middle of the 19th century the city enjoyed a blossoming like few others on the continent. It would culminate in the 1888 Universal Exhibition, when the city was officially unveiled as a modern metropolis and the capital of a Catalonia which, itself, was being reborn.

The title of this project links the names of Cerdà and Barcelona. However, it is worth remembering that the original conception of the extension and renovation plan was not the sole work of a brilliant engineer, nor was its adoption as a model for the growth of the city the mere result of an act of external imposition. Indeed, the conception, approval and implementation of the Cerdà Plan are inscribed in the complex history of Barcelona, with a city council which, in the mid 19th century, led the cause of the modern city in Spain all alone.

The 150th anniversary of the approval of the plan has served as an opportunity to revisit events and has led to important advances in our knowledge of that historic moment. We now know so much more about how events unfolded – beginning with its metropolitan scale, which would later be consolidated in the municipal unification of 1897 – and about the impact of its application a century and a half later, when Barcelona society is now once again contemplating the future face of the metropolis and a new model of city governance.

These advances in our knowledge of the progress and potential of Cerdà's city are manifested in a host of new investigations, seminars, exhibitions and publications. The work you have in your hands sheds light on a crucial and, until now, overlooked issue: that of placing Cerdà and his plan in a historical context, and within Barcelona's urban process in terms of both its origins and the immense challenges of its practical implementation.

Joan Roca i Albert  
MUHBA director

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Unattributed texts by the project curator, Marina López Guallar



Lluís Rigalt i Fariols. *Carrer de la Princesa*, 1867, RACBASJ

## Barcelona town-planning policy. A decisive decade, 1851-1860

Marina López

Eighteenth century expansion had opened up a new cycle in the history of Barcelona. Even the upheaval caused by the War of Independence and the prolonged post-war period exerted only a temporary brake on the city's development. In the mid 1830s changes came thick and fast: industry was mechanised, absolutism was sidelined and scientific thought gave battle to the Church.

However, although the town planning revolution was under way, it was far from complete. The projects to renovate the city's interior, though numerous, were essentially modest in ambition. The barrenness of the debate over the extension, which dragged on interminably, was becoming increasingly evident. In the end, there were two immutable facts: the scarcity of resources of the Barcelona City Council and the persistence of military control of the city.<sup>1</sup>

Overcoming this state of affairs was the major challenge facing Barcelona society and its leaders in the fifties, a decisive decade for town planning policy that would see the foundations laid and the boundaries marked for the modernisation of the city during the second half of the century.

In 1852, the project to open up Carrer de la Princesa rounded off the layout of the axial thoroughfare, a wide straight street lined with shops that ran right through what was regarded as the city proper, from Passeig de la Rambla to Passeig de Sant Joan and the esplanade of La Ciutadella.<sup>2</sup> In 1860, the definitive approval of the Cerdà Plan and the authorisation to build marked the beginning of the development of the extension, to be known as the Eixample. And so began a decade of works that strove to make up for lost time.

### An interior renovation: Carrer de la Princesa, 1852-1853

The opening of Carrer de la Princesa was the work of Santiago Luis Dupuy, a progressive mayor from the world of business who, having agreed to work

with a moderate cabinet, took possession on 10 December 1851. Faced with a council that was highly critical of his arbitrary appointment, he was relieved to have the confidence of the government and undertook to use it at the service of a programme set out by the councillors, as the representatives of the local community.<sup>3</sup>

What was that programme to be? As many of the councillors were, like Dupuy, businessmen, it was not necessary to spell it out. In short, the aim was to assume Barcelona's share of the proposals put forward by the so-called "industrialist party". Not exactly a political party in the usual sense of the word, the industrialist party was more of a supraparty organization that was Catalan in origin and based on a stance taken over the respective roles of the state and private enterprise in the creation of wealth. Once a certain stage in the development of the new industrial economy had been reached, the leaders of the change demanded of the central government an active policy that would provide new or improved infrastructures and a liberalisation of the legal framework so as to continue the deployment of capitalism.<sup>4</sup>

On a municipal scale, those ideas were expressed through a town planning policy designed – in close cooperation with private enterprise – to push forward the renovation and unblock the extension. The ambition was to renovate Barcelona in the same style as other large European cities of the time. However, the subordinate character of the municipal institution meant that it needed to win the confidence of the state and break down its foot-dragging routines. Dupuy guaranteed both things.

The mayor embraced the idea of finishing the axial thoroughfare, and on 20 April 1852 he submitted a project to the council to open up the last stretch. The project included a proposal from the works committee to the plenary and some complementary documents, such as the works plans, the estimate for paying the expropriations and the bases for a loan of 3 million

reals to cover 60% of the cost. Once the approval of the council had been obtained, it was passed on to the civil governor with suggestions for the procedure to be followed.<sup>5</sup>

The project was, at once, a combination of declarations of principle, a systematic examination of the problems for a town planning operation and a set of specific solutions that went beyond the work on Carrer de la Princesa. Nor was there any attempt to conceal the intention to create a new management model for public town planning works that would be more in keeping with the changing times and the values of civil society. Technical excellence, respect for private property, the earmarking of sufficient resources and a well-oiled procedure were among the requisites of the model.

Francesc Daniel Molina, an architect from the Acadèmia de San Fernando and the winner of the competition for the development of Plaça Reial, was the technician hired by the council to guarantee the excellence requirement. He was commissioned to correct the mistakes made during the construction of Carrer de Jaume I, which had drawn a good deal of criticism. With that in mind, he drafted a general plan of the axial thoroughfare and drew the existing alignments and two proposals for the new stretch. These formed the basis of the ruling of the Reial Acadèmia de Belles Arts de Barcelona, which was accepted by the council as the final decision.

The expropriation law of 1836 imposed four conditions to be met before the transfer of land from the private to the public domain would be made effective. The first was a declaration of the works as a public utility, a faculty reserved for the state. The second required another “declaration”, this time of the properties to be expropriated. In order to achieve this, the alignments plan would identify the plots of the properties affected between Plaça de l'Àngel and Passeig de Sant Joan. The council promised the owners affected by the opening of the street that the two remaining requirements would be respected, namely to fix the price of the compensation by common agreement between the appraisers of the two parties (the possibility of a third appraiser in the event of discrepancies was envisaged) and to honour the payment before the effective transfer from private to public domain.

The loan needed a special justification because it was a new feature of the budget. The first line of argument was obvious: the council had depended financially on the state since 1714, the annual allocation would not cover the obligatory preset expenses, recourse to credit was the best way to finance new works, and the recent constitution of financial entities opened up good prospects. In that context, Dupuy, who had inspired and perhaps even drafted the works committee proposal, provided the second line of argument: public works were a productive investment and credit an ordinary resource. And so the success of the venture depended on obtaining the profits within the period

provided for and the expeditious completion of the works. The whole design of the project was at the service of that last objective, but it was not sufficient as its fulfilment would not depend on the council.

Jurisdiction over the city of Barcelona was shared between the three administrations: state, provincial and municipal. The inevitable consequence was the long, drawn-out nature of the formalities. There was also the threat of a block at any stage, a repetition of the send/return cycle of documents or even the indefinite prolongation of the procedure. And not only were administrative factors involved; political concerns were equally, if not more, decisive. The tension between civil and military elements, and the endemic rivalry between the Ministry of the Interior and the Ministry of Works accounted for the state government's lack of unity of action, which, in turn, often led to power struggles that hampered the normal functioning of the administration. A strategy had to be designed to overcome all these obstacles and allow the project to go ahead.

Since the main instrument available to Dupuy was the Barcelona city council, demanding an active and decisive role for it in the city's town planning policy had to be the first step of the strategy. That, however, would amount to a gauntlet thrown down to the military.

The procedure for the opening of Carrer de la Princesa adopted by the city exemplified the central role the council aimed to play. It took the initiative, its technicians drafted the project, a consensus was woven between the parties with municipal representation, and the unanimous approval of the councillors was obtained.

The next step was to seek the cooperation of the governor, the other local authority, who had the power to pass on the project to the central government. At Dupuy's instigation, the provincial authority accepted an abbreviated procedure to approve the opening of the street. It consisted of bypassing the declaration of the works as of public utility, which would have risked the delaying intervention of the highest institutions of the state. The argument laid down was that it was a continuation of the axial thoroughfare and therefore not a new work. The obligatory round of consultations with the administration was reduced, for the same reasons, to a single academic institution which was provincial in scope.

Now, all that remained for the works to begin was to gain the final approval of the central government. To force its hand, the council mobilised three networks in Madrid: its permanent agents in the capital, the senior civil servants who had worked in Barcelona and the so-called “Catalan council”, i.e. the members who represented the principality in the Spanish Parliament. The exchange of correspondence showed that some of the members were heavily relied on, since they combined political representation with a defence

of the interests of the industrialist party – they were its ordinary spokesmen – and they provided crucial support to the pressure group that had been installed in Madrid for several years.

In this way, and in just over two months, the confirmation of the public utility of the work, the approval of the twofold content of the plan – alignments and estates affected – and acceptance of the budget, including the authorisation to take out the loan, were all obtained. At the end of August the mayor decreed the launch of three different processes: the negotiation of the loan with the financial entities, the sale of parts of the municipal property stock – one of the resources provided for in the budget – and the expropriation of the land. The latter process would prove to be the most complex.

The council had already accumulated a certain amount of expropriation experience in its previous work on the completed stretches of the axial thoroughfare. For example, prior knowledge of the land in the different city streets helped Molina in two key areas: first, to calculate the overall cost of the compensations in the estimate and, then, to make the proposal for compensation in each specific case as appraiser for the municipal party in all the expropriations planned and carried out for the opening of Carrer de la Princesa.

Moreover, the application of the Law of 1836 in Barcelona was guided by a principle provided for in the French Law of 1807 but not recognised by Spanish regulations, though in general they followed the Napoleonic precedent. The purpose of the principle was to reduce the costs of the expropriations in favour of the public administration, by introducing into the calculation of the compensation not only the value of the part of the land lost by the owner, but also, conversely, the value it would add to the remainder of the property as a result of the urban improvement. In 1849 a ruling of the Royal Council, the highest advisory body of the central government and the leading organ for action under administrative law, found for Barcelona council against the claims of a resident of the city who had denounced that municipal criterion.

The fall of the Bravo Murillo cabinet, which had appointed Dupuy on 14 December 1852, prompted the mayor's immediate dismissal in the last days of the year. Spanish law stated that any changes in the leadership of the state automatically meant the fall of the pertinent local authorities. But the fall of the mayor did not set back his work. The council had accumulated experience and put together a team who were resolved to carry it on. In addition to Francesc Daniel Molina, it included leading figures of the city such as the jurist Manuel Duran i Bas, a close friend of the mayor who was appointed secretary of the council, and a second architect assistant to Molina, Josep Oriol Mestres. Also, two outstanding industrialists, Valentí Esparó and Ferran Puig, were appointed as senior councillors on the municipal committees charged with overseeing the works.

Nonetheless, by 31 December 1852 the achievements were still uneven. The lawsuits over the property deeds, some of which were filed by the captain-general, hampered the sale of the municipal assets. Moreover, four months after the beginning of the process it was discovered that the expropriation procedure was slow and would take more than a year to reach completion. There was some good news though: the plenary and the major contributors had approved the bases of the loan, the public announcement of it was being prepared and the shares were about to be issued. The next stage was already provided for and the civil governor had been notified. It consisted of placing the shares and receiving the money, i.e., leaving everything tied up in Barcelona before applying to the central government for approval of the municipal management of the conditions agreed for the loan.

However, a difficult political juncture in 1853 came close to frustrating everything. While the fall of Bravo Murillo may have precipitated the crisis, it by no means signalled its end. No fewer than three cabinets followed one another in Madrid the following year and everyone came to accept the end of the moderate monopoly of power, which had lasted since 1844. By then, an anti-government front was coming together in Barcelona. The Catalan moderates joined with the progressives in the general elections of February 1853 and repeated the alliance in the municipal elections at the end of the same year.<sup>6</sup> Amid an atmosphere of reaction, the new civil governor prevented the sales of the municipal properties, even though they had been authorised by the previous cabinet. There was an attempt to keep the news secret, but it still had negative repercussions on the sale of shares for the loan and brought the expropriations to a standstill.

A rapid municipal reaction, between May and June 1853, sought and found resources to replace those that had been discarded. The placement of the loan was closed and the expropriation agreements speeded up, fixing both the compensations and the owners' obligations with respect to evacuation, demolition and the removal of rubble from the street.

The latter action divided Dupuy's team. Some endorsed the proposal to begin the works, even though the expropriations had not been paid and not all the land was available. It was a reversal of the original plan and a return to the past: the street would not be opened in one single operation or within the expected period, but by stretches and wherever possible. The hostility of the government and the good offices of Duran i Bas contributed to a swift reconciliation: the council closed ranks and, after negotiating and obtaining the support of the owners of the street, announced the inauguration of the works on the seaward side – between Flassaders and Montcada – for the first week of October. It was a leap forward which a campaign by the pro-government press tried to stop. They demanded that the works be abandoned

and the governor forbade the inauguration. In protest, the mayor who had replaced Dupuy, Josep Bertran i Ros, tendered his irrevocable resignation and the council demanded Dupuy's return to office.

Despite rising tensions with the provincial authority, the council, unwilling to back down, published a manifesto of their sentiments in the press. The council placed its trust in the new cabinet constituted on 19 September because it included leading Catalan figures in key positions. Ángel de Villalobos and Pascual Madoz, members of parliament and the most active men in the industrialist lobby in Madrid, came up with the solution to the conflict. They supported the council's demand – to allow the solemn inauguration of the works in November – before the government and, by way of compensation, offered to adjourn the approval of a new estimate that had been submitted by the council. That outcome made the opening of Carrer de la Princesa irreversible in exchange for the inevitable delays and precariousness of the implementation.

### The municipal extension programme

The second item of the public works programme sent to the government by Dupuy in 1852 argued that the extension was a need felt by all the economic sectors and defended by all the local authorities. In the spring of 1853, while defending the continuation of the works on Carrer de la Princesa, the council took the initiative by submitting a well-defined programme for an extension which closed the debate, signalled a break with the military and called for the immediate development of the outskirts of the city.<sup>7</sup>

The trigger for the change was a rumour that the central government was about to authorise a limited extension of the city, as the military had lobbied for. However, the response was not only a rejection of a mere expansion of the walled precinct but the formulation of an alternative which had obviously been discussed beforehand.

The council's initial response was to set up a special extension committee, intended to be permanent, which soon became a board of all talents as the appointed councillors were joined by representatives of the economic corporations and the editors of the city newspapers. The municipal extension programme for the next twenty years emerged from those meetings. It had a single aim, divided into three inter-related points: unrestricted extension, municipal ownership of the land that would be freed up by the demolition of the walls, and the construction of tree-lined avenues to replace the fortified perimeter.

At the same time, a smaller committee, chaired by Valentí Esparó, launched a press campaign with the oft-repeated slogan, “no to a small extension, yes to an unrestricted extension”.

Lastly, to deliver the demand to the government, the protocol reserved for occasions when the council confronted the local government delegates was adopted, i.e., Barcelona City Council directly addressed the head of state. That gesture, which aimed to recall the direct contact between the old *Consell de Cent* (the Council of One Hundred, an institution of the Barcelona city government which had held considerable influence between the 13th and 18th centuries) and the Crown, was served by a general discourse about the state of the city. It was designed to convince of the fairness and appropriateness of the council's request, and was drafted by an author of recognised prestige.

In 1853 Duran i Bas was chosen to write a piece comparable to those written in the 18th century by figures such as Romà Rossell or Capmany, at the service of the council. It was a portrait of a city in chains, in stark contrast to the alternative prospect of future prosperity promised by an extension with no more limits than those imposed by nature. The message was solemnly delivered to the Queen, by hand, by the plenipotentiaries dispatched specially by the city and the influential acolytes recruited in the Court. Behind the scenes, Villalobos and Madoz deployed their skills once again.

If we compare this procedure with the one adopted the previous year to finish the axial thoroughfare, we can appreciate the fundamental continuity of many of Dupuy's options, but also new features that were consistent with the change in the scale of the works that were now to be undertaken.

Whilst those changes were entirely managed by the councillors, to launch the extension it was deemed necessary to secure the unanimous support of local society and make a show of the general consensus that had been reached. Although the council lost pride of place, the municipal commitment emerged even stronger. For the same reason and perhaps spurred on by recent events, they turned to the press; and so the walls re-entered the public debate and an attempt was made to add the weight of public opinion to the block formed by the council and the active population.

All the details had been addressed and the weakness of the government raised hopes that it would give way. But this time the stakes were too high and, despite the change of cabinet and the petition sent to the king – in October 1853 and January 1854, respectively –, Madrid's answer was still no. All the same, it was a pyrrhic victory for the state as the local community now clung to the programme and was determined to make it succeed.

The deterioration of the political situation, as armed movements moved against the government in February 1854, made things a lot easier. Barcelona was the first Spanish city to support the progressive uprising in mid July and the Provisional Revolutionary Council swiftly decreed the demolition of the walls.<sup>8</sup> The city council received a commission to enforce the decree and summon the owners of the outskirts to discuss their financial contribution

to the development of the extension. The owners were the last to join the municipal extension programme and they soon made it clear to the council that they were not to be sidelined. In the document discussed at the meeting, the owners swung between the maximalism of abrogating the right to develop against the council and the pragmatism of accepting the custom of the city in regard to building on undeveloped land, i.e., free cession of the land required for the thoroughfares and payment for the layout. But once an exception had been made for the streets that needed opening up to allow the building of the houses to begin, which were classified as “public works of private utility”, the owners of the extension washed their hands of the financing of the other public works and dismissed the idea of a special contribution as a price or compensation for the right to build on the outskirts.

The jurists consulted by the authorities about the owners' response skimmed over the issue of the urban development agent and concentrated instead on providing a foundation for the special contribution and linking it to the application for and concession of the works permit; a reasoning and association which the council adopted as its own position from then on. However, the council, lacking the owners' pragmatism, saw expropriation as the only legal means of passing private land, including the streets, into the public domain, concluding that the financing of the compensations had to be public. To reduce the ensuing bill which, they acknowledged, was exorbitant, they used practices introduced by the city council into the application of the Law of 1836 which allowed them to adjust the price of the value of the properties before embarking on the development process.<sup>9</sup>

And so, at the end of the brief period between May 1853 and mid August 1854, the municipal extension programme was defined and a discussion of the “economic guidelines” – the financing and respective obligations of the public and private agents – had been proposed.

### Madoz, the man of the moment

On 30 July 1854 the first cabinet of the new phase was formed, presided over by Espartero, who placed O'Donnell in the Ministry of War. The Progressive Biennium began in Barcelona on 12 August, when the new civil governor, Pascual Madoz, and the captain general, Domingo Dulce, took possession. They lived up to the high expectations aroused. As the bearers of state approval of the demolition of the walls, they lifted the state of siege that had been in effect almost continuously in Catalonia. Dulce, an advocate of the withdrawal of the military to their barracks, left the whole space free for Madoz.

Madoz was governor of Barcelona at a very delicate juncture and lasted barely two months. He faced not only a confluence of the difficulties derived from the political transition and a social crisis – workers revolting against the innovations which had led to unemployment – that brought industry in Barcelona to a standstill, but also an outbreak of cholera that left over 6,000 dead in just eight weeks.

One of the governor's first decisions was to renew the councils and call municipal elections in the first days of September, but they were not held until late November due to the epidemic. Meanwhile, a provisional council had been formed with some members of the last progressive council to govern the city, in 1843, to which were added ranks of new members who came in to fill the vacancies. In his role as a chronicler, Dupuy cursed the ill timing of the restoration.<sup>10</sup> The provisional council had to cope with the consequences of the unforeseen costs of the health crisis and the demolition of the walls. As evidence of the severity of the financial difficulties, funds earmarked for Carrer de la Princesa were diverted to combat the cholera epidemic in late September 1854. By October, municipal bankruptcy had become a reality and the council was forced to live on credit. In November, Josep Oriol Mestres, Molina's assistant architect, resigned and the interest payments from the second half of the year were not paid to the buyers of the shares of the 1853 loan.

In the petition addressed to the government, on 21 September, to raise the issue of this critical situation, the council sought to unload the expense of the demolition and reproached the state for not assuming the costs of knocking down walls which it regarded as its own property.

At that moment, Madoz took over the weakened council and sponsored the unrestricted extension programme which he had already defended in Madrid. To ensure the continuation of the demolition of the walls, he travelled to the capital on 1 October and wrung from the Treasury the Royal Order of 6 October 1854, which contained the initial authorisation of a second loan in favour of the city, once again with the guarantee of the land that would be freed up by the demolition of the walls. Back in Barcelona, Madoz managed to get a committee made up of industrialists and bankers, such as Joan Güell and Manuel Girona, to cooperate on the management of the financial operation.<sup>11</sup>

The bases of the new loan explicitly stated that the council fully accepted the conditions and waived any litigation over the ownership of the land upon which the walls had stood. On 18 October, once those bases, which were copied from those of Carrer de la Princesa, had been published in the press, Madoz made an appeal to the people of Barcelona in which he announced the acquisition of a municipal debt of over 5 million reals and urged them to cover the loan to “save” the council and help complete the demolition.

When he left Barcelona on 21 October, Madoz was sent off with full honours. The strong man of the regime, he left to join the Parliament and the central administration. He left a competent and well-briefed successor, Ciril Franquet, who occupied the post until 1 July 1855. Through Franquet's mediation Ildefons Cerdà joined the extension programme, though he seems to have been on the scene since the very outset.

### Ildefons Cerdà, the leading player

Cerdà was neither an unknown nor an outsider in Barcelona. Since 1849, his interest in the material adaptation of the city to embrace the transport revolution had led him to quit the Corps of Engineers and concentrate on an in-depth study of the locality. A news item from June 1854 places him on the council, alongside Ferran Puig and another councillor, with whom he prepared the preliminary project for the tender of the municipal contract that aimed to put an end to the monopoly of the Catalan Gaslighting Company. The engineer also appears in early September as a commander of the National Militia, a task force Madoz helped to form within the council and which was put at the service of the consolidation of the new regime.

As regards the beginning of his work on the extension, Cerdà mentions in one of his last pieces of writing the date of 12 August, which was also the day Madoz took possession. That, however, seems more likely an acknowledgement of his personal relationship with the new governor than a reference to a specific commission, of which there is no record. It is more likely that Madoz recommended the engineer to his successor, Franquet, who resumed all impending business in the last days of October 1854.

Indeed, one of Franquet's first actions was to appoint Cerdà as civil engineer attached to the provincial organs of the Public Treasury, with the task of putting up for sale the land that would be freed up by the demolition of the walls. The committee that negotiated the loan on that land had recognised the difficulty of carrying it out at such an unfavourable economic juncture – the sum amounted to 20 million reals, more than six times the 1853 loan – and proposed that the drafting of the plan and the preparation of the land on which the walls stood be speeded up. Later, all trace of the loan was lost; the most likely reason is that the second phase, final approval, was never processed. Nonetheless, Cerdà's spell as a member of the committee served as a springboard for more decisive commissions.

The opportunity arose with the Royal Order of 26 October 1854, which decreed the constitution of a professional committee for the extension with military representation. That provision, which is a good example of the

usual tug of war between the different sectors of the government, was applied by Franquet, who mistrusted the military. Among the figures he co-opted onto the committee were the military engineer appointed by the relevant authority; Cerdà, as a representative of the interests of the state; and an architect appointed by the city, Antoni Rovira i Trias, who had previously served as a councillor on the restored council of 1843 and a member of the municipal extension committee. Cerdà also became a councillor soon afterwards, in the November elections which returned a progressive majority to the council. He was then appointed to the extension committee to replace Rovira, who had, himself, resigned as councillor.

The professional committee specified its goals and planned its tasks – collecting statistical information about the city, producing the topographical plan of the outskirts and laying the bases of the future extension –, but it was quickly sidelined or dissolved. Cerdà, however, came out on top when, on 16 December, the governor commissioned him alone with the drafting of the topographic plan. This was the second crucial step, following the demolition, aimed directly at the implementation of the extension of the city.

From that moment, Cerdà – in his role as both a technician at the service of the civil governor and an active politician on the council – would play an increasingly important role as a bridge between the civil government and the council.<sup>12</sup>

### The public programme, 1854-1855

Since 1783 the city of Paris had had a general renovation plan to supervise specific operations. That fact was common knowledge in Barcelona, and the possibility of imitating the Parisian model had been discussed in the municipal offices since 1817. The technicians were in favour, but the politicians were opposed for two reasons. One was the shortage of resources and the other, more substantial reason was the absence of a legal framework which, in France, made the alignments drawn on the approved plan obligatory for the owners.

Nonetheless, as momentum gathered in Barcelona the internal dissensions of the council were overcome and money was found to produce individual plans for most of the streets in the old city. And little else beyond a case-by-case approach was required, since the renovations – with the exception of the ones provided by the confiscations, as was the case with the first stretches of the axial thoroughfare – amounted to little more than occasional realignments and small scale extensions to eliminate bends and make the whole street the same width. What is more, they were always subject to the favourable attitude of the owners affected.<sup>13</sup> Since, in this way the improvements had

multiplied but the results still remained rather modest, the extension seemed to present a great opportunity to introduce the modernising innovations and, more specifically, to impose a general plan on the owners.

The owners, however, were more in favour of adopting the traditional system of partial plans – signed by technicians in their own service – in the event of the opening of streets or district projects on undeveloped land. That was how the Raval had been developed in the late 18th century.

One of the first effects of the common understanding between the local public agents was the rejection, between November 1854 and February 1855, of the three petitions of the property owners of the outskirts led by Manuel Gibert, a moderate politician who had held important posts in the recent past. The owners wanted to begin building along the line of Passeig de Gràcia and repeated the financing offers prior to Madoz's arrival. The municipal works committee, charged with the granting of permits to private individuals, flatly refused to fix the alignment of houses along Passeig de Gràcia, and argued that the public administration technicians should draw up a general extension plan as a prior condition to development.

The eclipse of the municipal authorities was drawing to a close and the guidelines set down in the 1853 municipal programme were gradually being developed.

One of the most important requests in the 1853 petition to the Queen, signed by Duran i Bas, was for the provision of public buildings in the new city. In December 1854, a subcommittee of members of the Economic Society of Friends of the Country, which included the former mayor Bertran i Ros and the architect Josep Oriol Mestres, prepared – at the instigation of the local authorities or to be addressed to them – a complete ordered list of the kind of public buildings to be built in the extension. The last section of the document featured proposals for the housing model, which owed a debt to the hygiene theories of the day, alongside other, more generic indications about the layout of the streets and the zoning.

As part of the general process of opening up to corporate and citizen participation, from March or April 1855 different groups began to meet, something which the local authorities were keen to encourage while also maintaining their independence. The economic corporations that had been summoned previously were joined by the academic institutions and professional bodies, all interested in intervening in a grand project of improvement which seemed ever closer at hand.

In May, despite its good understanding with the provincial authority and the leaders in Madrid, the council, including Cerdà, did not hesitate to unanimously claim the ownership of the walls, a constant point of friction with the state. The initiative was the final product of an agreement of the

plenary in October reached after the realisation that private management of the loan undermined claims to municipal ownership. There was yet another solemn appeal to the Queen and a presentation of the legal foundations for the city's claim as a corrective to the over-accommodating approach of the previous October. Once again it came up against the obstacle of the effective ownership of the land by the state.

One month later, and at a moment of high tension, on 28 June 1855 Ciril Franquet presided over a general meeting of the delegates of the two local representative institutions – the city and provincial councils – and the groups we have just mentioned. A small drafting committee – Gaietà Almirall, Joan Magaz, Manuel Duran i Bas, Pau Maria Tintorer and Elies Rogent – laid down twenty “general guidelines”, a range of ideas proposed by the Economic Society that served “for the shaping of the plan of the new Barcelona” and which were approved by the assembly. Both the guidelines and the justification that came later brought into circulation a series of ideas on a range of issues, including: the extension model – the construction of official buildings and commemorative monuments, the development of public services distributed in an egalitarian manner within the city, the construction of healthy housing and the provision of green spaces – ; the procedures for drafting the plan – an open-tender competition in Barcelona after final approval by Madrid – ; and the economic plan, with an observation made in passing but favourable to the special contribution of the owners. The businessman Pau Maria Tintorer did not sign the submitted document and put on record his disagreement with the severe limitation of the development of the plots and the height of the houses in the model of housing put forward for the new city.

Despite the obvious differences, Cerdà's topographic plan and the twenty guidelines of the committee are expressions of the radical spirit of emulation which reigned in the city at that historic moment and were of comparable importance in the early development stages of the extension. The plan is a demonstration of Cerdà's technical excellence and the guidelines are the ultimate expression of the expectations aroused among the people of Barcelona.

Cerdà recognised the significance of the work done at this stage when he included both the municipal exhibition on the walls and the 1855 guidelines among the documents selected for the history of the extension which he presented in the 1859 report.

### The open end of the Progressive Biennium

The heightening of the social crisis and the deterioration of the political situation resulted in the toppling of Franquet, who tendered his resignation on

21 May 1855. This date coincided with the publication of a Royal Order that condemned his policy of conciliation with the workers' movement and announced the reintroduction of the state of siege by the captain general Juan Zapatero. Franquet's resignation was not accepted until 4 July, when the general strike in the city had already begun. That was the beginning of the final stage of the Biennium, which in the end lasted just one year, until July 1856. The new governor, Ignasi de Llasera, a career military man, adapted to the new conditions, which meant direct subordination to the authority of the captain general. His first decision was to force the council, which had also resigned, to continue with its work.

The changes did not affect Cerdà, even though he had been working with the workers' leaders since May; nor did they halt the preparatory works for the extension. On 15 November he wrote to the council and on 23 of the same month to the governor to notify them that the topographic plan, commissioned one year earlier, was now finished. The report on the preliminary project for the extension, which no-one seemed to have formally commissioned from him, is dated 16 December. On 27 November the ruling of a special committee created to examine Cerdà's plan acknowledged its high quality, and included a special mention about the representation of the relief. Three days later, on 30 November, in accordance with the committee's proposal, the council decided to present the engineer with a medal in recognition of the knowledge and expertise he had shown in drawing up "the extension works and the plan of the outskirts".

The 1855 report is short compared with the later one of 1859, but there is no doubt that the conception of the ideal house, which passed unchanged from the one to the other, already occupied a central place in the earlier report, when the memory of the cholera epidemic was still very much alive. Cerdà shared his hygiene theories with the associates of the Economic Society and, by establishing a direct correlation between urban density and mortality rates, underlined the importance of the calculations of air quality in an urban setting as built up as Barcelona. More specifically, he compared the estimate of the volume of breathable air per person with the conditions offered in the houses in the walled city and made the so-called "atmospheric cube" of the marital bedroom a core part of the future extension.

A ruling of the works committee, together with the extension committee, of 4 December, urged the council to begin the new development in order to give jobs to the unemployed. It also proposed to apply to the central government for authorisation to open four main streets and take out a loan to finance the works. Such efforts to help the needy in economic crises were often used as justification for municipal public works, which generally came down to occasional modest operations. Applied to an enterprise of such scope,

it seemed a poor argument and suggested an attempt to speed up the closing of one phase and the transition to the next one.

Some details of the credit operation are known: a sum of 10 million reals, half the amount of the loan of October 1854, was petitioned, along with the guarantee, once again, of the land that would be freed up by the demolition of the walls. As it is an internal document, it offers a frank summary of the municipal concerns. It shows the reticence of the city government officials – obliged to share the management of the extension with the state delegates – about the "cluster" of obligations and the "dreadful" state of the public coffers. It complains about the constant sniping at the council, the result of "public impatience", and "private interest". It insists on the imposition of the special contribution from the property owners of the outskirts, without which the payment of interest and the repayment of the credit would be impossible. And it proposes that Ildefons Cerdà and Gaietà Almirall – the municipal representative on the committee drafting the guidelines – travel to Madrid to defend the demands and obtain state approval. Once the proposal had been unanimously approved, on 7 December, the relevant petition to the government was drafted, which Cerdà summarised briefly in the history he wrote in 1859.

The last part of Cerdà's report provides details of this initiative of the two committees, which he himself may have promoted or at least seconded. It is at least clear that he assumed responsibility for the corporate representation and involved himself in a very personal way. The last paragraphs of the report, which may have been introduced at the last minute, are an urgent summary of those "extension works" alluded to in the planned inscription for the medal which he would never be given. Under the title *Sketch for the Preliminary Project*, Cerdà begins by outlining which initiatives he was not responsible for: neither the economic plan – the financial, legal and administrative conditions for overseeing the extension –, nor the building ordinances; items the engineer considered part of the later phase, the project itself.

With regard to what he had undertaken, it is clear that he considered the goals accomplished. These were contained within two blocks of notes entitled "data, news" and "observations." They included a study of the "extension issue"; and the "layout and distribution" of the preliminary project, attached on a transparent sheet on a scale of 1:5000 that could be superimposed on the topographic plan, but which has since been lost. The description of that layout lists the four main streets, which were adjusted to the direction of healthy winds and coincided with the ones indicated by the council. It also sets out the idea of building squares at the crossroads of the main streets and setting the limits of the extension, between Travessera de Collblanc and the sea in one direction and Carretera de Sants and the River Besòs in the other.

The last paragraph of Cerdà's report has two clear aims: to propose what actions the state should undertake and to announce that the engineer is reserving some works for the later phase. Cerdà makes it quite clear what he expects: a "precise, specific" determination of the "main conditions to which the shaping of the definitive project is to be subject". As in the case of the council, his decision-making process regarding the layout and the announcement of the future drafting of the project can be accused of lacking a certain amount of consistency.<sup>14</sup> But what Cerdà had shown was his pragmatism and capacity to respond appropriately to the political emergency.

During the days that followed, the schedule set jointly by the council and Cerdà was observed. On 19 September Cerdà and Almirall moved to the capital; they also took the governor's commission to deliver the topographic plan to the Ministry of Works – the only intervention we know of by the civil governor, Llasera, during that whole time.

Cerdà stayed in Madrid until 23 January. His stay coincided with the constitution of the governing committee, formed by senior civil servants from all the ministries and presided over by Ciril Franquet, who at that time was head of the central administration. The committee, formed at the request of the Council of Ministers, had to immediately resolve a series of matters which Cerdà tabled as an afterword to his history of the preliminary stages of the extension included in the 1859 report. These included the need for and size of the extension; the continuation or termination of the city's status as a fortress; the points at which the building work should begin to protect private interests or the general interests of the state; which of the two public agents, the city council or the state, should finance the four streets requested; the rules and ordinances for the buildings and the respective obligations of the state and the owners; the scale of the budget needed to cover the expenses of the demolition and the drawing up of plans; and which ministry had to take charge of completing the project and supervising the implementation.

The list is an exhaustive but highly disorderly inventory of the issues raised by the proposed development of the outskirts. Some of the points mentioned seemed to have already been resolved; among the others, some were long standing, others had just arisen, and there was a third kind which could justifiably be postponed. The general impression was the committee wanted to leave maximum freedom to the senior civil servants. According to Cerdà, writing *a posteriori*, the committee concluded the task undertaken in July 1856 and the relevant decree was drafted. However, a change in the political landscape – the replacement of Espartero by O'Donnell as prime minister – prevented its publication. It would be fascinating to be able to consult the decree and check the list of matters closed at state level on that date. The Progressive Biennium formally ended in October with the return of the moderates to power.

## Two public programmes, 1859

A new book has just been published about the events of 1859, providing new data about the so-called "battle of the extension", i.e. the confrontation between the council and Cerdà over the plan of the new city.<sup>15</sup> The author, Glòria Santa-Maria, gives a brief summary of her book in this catalogue which, needless to say, would make redundant any attempts to provide at this juncture a detailed account of the events. However, on the basis of Santa-Maria's findings and other data now available, it seems reasonable to discount two opposing and still influential views: the first which portrays Cerdà as an outsider in Barcelona and the second which claims that the council was not aware of his competences. And perhaps it is also time to begin to construct a more understanding view of that episode.

The Progressive Biennium had closed with a demand that the state take a series of decisions before the drafting of the extension project; the answers had been left hanging in the air. After a new two-year period of "moderate" reaction, in July 1858 a new cabinet was formed in Madrid presided over by O'Donnell. The term "moderate" refers to the Progressive Biennium, but on this occasion O'Donnell governed alone and had a new party behind him, the Liberal Union, which had emerged from the convergence of the centrist factions of the two main parties which had, until then, been hegemonic. The changes affected the procedures for acceding to and exercising power, but not the programme itself, whose objectives, to all intents and purposes, remained the same: emphasis on public works, freeing up the forces of production and the construction of capitalism and administrative decentralisation. In the end, the new administration proved to be a strong government, which lasted almost five years; such a rare event in 19th-century Spanish politics that it earned – and has preserved to this day – the moniker "the Long Cabinet".

The new government, with its stated technocratic calling, took just a few months to reach a decision about the Barcelona extension. The influence of the Barcelona entities on the government at that time was great. The newly-appointed progressive mayor, Josep Santa-Maria, rejected the limited extension programme instigated by the military and accepted by the council itself over the preceding two years, and demanded authorisation for the unrestricted extension. Cerdà settled in Madrid in November and December 1858 and may well have used his capacity for mobilising resources in the capital to assist Santa-Maria in his aims.

In the end, O'Donnell's cabinet published the Royal Order of 9 December 1858, which effectively removed the obstacles erected by the Ministry of War to the extension of the city. The order also included some key decisions that directly affected public finances – reaffirmation of state

ownership of the plots freed by the demolition of the mediaeval walls – and the city defence system, with the conservation of La Ciutadella and Montjuïc Castle and their respective protection areas. From the perspective of the demands of 1855, this response fell far short as it offered no final decisions on the characteristics of the extension project.

And so, all the city agents operating in Barcelona interpreted the Royal Order as a signal to take up the Biennium programme once again and, having learned from previous experience, they seized the opportunity, which this time extended to the renovation of the city’s interior. Cerdà had asked the state for precision and clarity in the determination of the conditions the technicians chosen to implement the definitive project would have to observe. The state evaded the issue and in Barcelona people felt authorised to move into action, i.e., to approve a definitive extension project with a view to immediate implementation.

The council launched the process that would culminate in the competitive tendering process for the extension and renovation projects. For his part, Cerdà applied directly to the Ministry of Works for authorisation to transform the preliminary extension project of 1855 into one which would also include the wholesale renovation of the city’s interior. Indeed, the granting of the unrestricted extension made it possible to finally undertake the cleaning up of the old city, a central objective shared by Santa-Maria – who pushed for it within the council and the higher authorities – and Cerdà, who saw the wealth the extension would generate as the only possible source of funding for the costly execution of the renovation programme and structured the two operations within his economic plan.<sup>16</sup>

Above and beyond agreement over the urgency of the renovation, the two parties that had become the leading players, Barcelona City Council and Cerdà, adopted conflicting approaches to the extension – public tender versus direct authorisation – based on a mutual ignorance that violated the facts that they themselves alleged as beyond question. They were well aware of the implications of what they were doing and, despite the countless justifying arguments they used to conceal it, they felt very uneasy.

There are numerous signs of this uneasiness or awareness of the difficulties of their own positions. Cerdà had been warned by Madoz – who knew what he was talking about – of the need to have the support of the council when the engineer brought the extension plan to his house in April 1859. A year later, in January 1860, Cerdà put his signature to the report *Pensamiento Economico* (Economic Thought) which, together with the building ordinances, rounded off the extension project. In the last paragraph, however, Cerdà showed that he was weighed down by a sudden sense of abandonment, describing his situation as that of “a simple individual isolated and thrown back on his own strength”.

Santa-Maria, for his part, proposed in August 1859 to mint the gold medal which he had intended, but forgotten, to give Cerdà back in December 1855. It was an exquisite gesture of neutrality, but the committee in charge of organising the tribute suggested a different inscription from the one indicated by their predecessors; the merit of the topographic plan was still recognised, but any mention of the “extension works” done by the engineer was erased, as if the preliminary project had never existed. The episode went no further, because the committee’s proposal was never submitted to the plenary, though it speaks volumes about the situation. It is not worth continuing down this road, though. Each generation and each individual actor in history selects courses of action, often for complex reasons, which they feel to be justifiable. But it is equally justifiable to treat the statements of historical actors embroiled in power struggles with a healthy dose of scepticism.

The attempt to understand and explain the disagreement has stirred up many controversies and is likely to continue to do so, but focusing attention on a single episode is not useful because it distracts us from others that are equally or more important. For example, we should emphasise that the two contending parties and the city agents, in general, shared at least one thing in common: they all had the support of the state. That has been said frequently about Cerdà but seldom about the council.

Cerdà repeatedly adduced the supra-municipal nature of the extension and, to his credit, he did not conceal the lack of confidence placed in him by the municipal administration, of which he was well aware. Between one argument and the other there has often emerged an exaltation of the role of the state in the conflict and a portrait of Cerdà as a fervent supporter of it. It may be more accurate to say that the state tagged behind Cerdà and that the engineer’s fervour did not last long. But we should not minimise what the state’s decision gave Barcelona, namely, a general plan of alignments for the new city which was obligatory for the owners to honour. And that was the goal that had been pursued but never attained until then.

The confrontation in 1859 between Barcelona City Council and the central government is the most important in a long series. And so, the fact that the council defended its own town planning policy and its determination to implement it does not necessarily mean it was unwilling to bow to the power of the state’s final decision, as was laid down in the current legislation. In more technical terms, the council defended its administrative autonomy or, as we say today, the principle of subsidiarity for the local administrations, according to which the closest agent is best-placed to detect and solve problems. What certainly disconcerted the city team was that this time the state not only decided what was to happen, but also sought to undertake the implementation, using Cerdà as its figurehead.

The last consideration of this epilogue must inevitably deal with the later stages because, despite common belief, after the famous Royal Order of 7 June the year 1859 continued with an adjournment of the decision about the extension plan, which lasted until the municipal tender was resolved and the state had formally decided to overturn the result. The cycle closed on 30 May 1860, but even then there was no definitive resolution. The state administration, as was its wont, opted for a judgement of Solomon: an amalgam of a decision about the obligatory nature of the plan and a non-decision about the economic proposals and the building ordinances which were an integral part of Cerdà’s project. It was yet another adjournment of the decision about these indispensable instruments which were now conditional on the approval of a state law, which the government undertook to put before Parliament. When it renounced it two years later, the obligatory nature of the plan became the only definitive element and conditioned the implementation of the extension.

In the end, the triumph of Cerdà or the failure of the city – so dependent on one another – were not only played down, but both parties discovered that they had lost other important battles along the way, such as the change in the legislative framework for town planning action or the possibility of renovating the interior.

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## The beginning of the extension and the battles for legal innovation, 1860-1897

Marina López

In the last forty years of the 19th century, the extension became a reality that brought the various population centres of the plain into the city and finally gave Barcelona the appearance of a metropolis. The incorporation of the smaller townships in 1897, provided for in the 1859 plan, gave legal sanction to an already consummated process. But the urban development did not have enough support from a legislative viewpoint, and both process and outcome suffered as a result. Needless to say, it was not for lack of awareness or trying on the part of all the local agents involved, of which the most prominent were Barcelona City Council, as the representative of collective interests; the owners, as parties directly interested in the development of the city; and Ildefons Cerdà, as the brains behind the town plan.

### The Barcelona demands

The adoption of a competitive tendering process and the controversy it generated put all the other municipal initiatives of 1859 in the shade. However, from the beginning of the decade, the municipal managers of the renovation and extension of the city had sought to put in place a satisfactory technical project, a clear and meaningful regulation framework to oversee the respective obligations of the public and private agents, and sufficient financing. In 1859 the requirements were identical. Once the procedure for selecting the extension plan had been decided, the council and the consultative committee made joint proposals aimed at addressing the other points indicated, and sent the central government two petitions. The first of these related to the reform of the expropriation law of 1836, and the second, to the economic bases of the extension and renovation of Barcelona.<sup>1</sup>

In the proposal for reform of the expropriation law, political argument took precedence over technical specification. The document recounts the background of the application of the 1836 law in Barcelona and concludes that it needs changing along the lines put forward by the French decree of 26 March 1852, which applied to the streets of Paris. That decree had been an exceptional measure – the response of an authoritarian government to an epidemic, it aimed at eliminating all the hovels that spread the contagion. The concept of urban renovation thus broadened its objectives. In addition to the expropriation of land required to open up new thoroughfares, it also proposed the expropriation of the land and the houses that occupied the strips on either side of the streets. The point was to destroy an obsolete urban fabric and rebuild the streets and the houses in accordance with specific hygiene requirements. The generic statement of the rule made it possible to apply it expeditiously, though, and encouraged excesses. In 1858, a ruling of the French Council of State found for the owners affected and established certain guarantees which, though they did not bring the expropriations to a standstill, made them considerably more expensive.<sup>2</sup>

This change in the expropriation model was introduced into Spain for the first time in the provisions that authorised the renovation of Puerta del Sol in Madrid in 1857, which was the local precedent cited by Barcelona City Council and its consultative committee as a specific alternative to the law of 1836. Like the French decree of 1852, the Madrid regulations imposed hygiene standards but were careful to respect property rights and imposed certain restrictions on the ability of the authorities to expropriate for public health reasons. The solution consisted of setting minimum sizes for building plots.<sup>3</sup>

Another important document of the time was the *Bases económicas* (Economic guidelines), which, as the title suggests, was a much more

technical text and did not stop at providing an exposition of reasons but went on to specify the rules to be followed. The *Bases* provide for the free cession of land for thoroughfares, now extended to the plots required for public squares and the building of the necessary infrastructures paid for by the owners. The two other sources of financing for public works were those already indicated in 1854: the cession by the state of the land freed up by the demolition of the city walls and a special contribution to be paid by the owners of the outskirts. But now the scope was also specified. The demand for state cession was confined to one third of the land on which the walls had stood, and the tax was raised to one third of the value of the properties. The council and the committee dissented on this last point. The council wanted to cover all the financing of public works – the construction of squares, gardens, official building and facilities – with the money raised from the state cession and the tax. The consultative committee’s proposal for the tax severely limited its scope and reduced it to providing resources to begin the works whilst awaiting the builders’ response. In relation to the earlier economic plans, the most important addition was a stipulation that the funds generated for the extension also be applied to the renovation, in accordance with the town planning goal of proceeding simultaneously with the two operations to remake the city.

The two Barcelona petitions were either ignored or rejected by the central government. Either way, the political reality was that the Spanish Parliament held exclusive legislative power in the country. Meanwhile, Cerdà had been authorised to study the extension project and was expected to provide the economic plan and other complementary contributions.

The proposals for the economic plan that Cerdà submitted in January 1860 differed from the municipal ones, but only up to a point.<sup>4</sup> In effect, the latter focused on reforming a law in force, while Cerdà emphasised the innovatory elements of his proposal. This difference in formulation, however, did not invalidate the overlap in the diagnosis of the problem, which was the content of the law of 1836, or the search for a solution, which turned to Napoleon III’s decree. The real differences lay in their recommendation of specific rules. Whilst the council wanted to ensure the viability of the plots of land – in terms of size and proportions – freed up by the expropriations, Cerdà preferred to stipulate an expropriation of the strips on either side of the street with a fixed depth of between 20 and 30 metres.

But Cerdà went beyond anticipating legislation and ventured onto ground which the others avoided: the practical implementation of the works. He anticipated the complexity of the town planning operations, denied the capacity of the municipal administration to come up with the financing, and arrived at the conclusion that only a private company, a big property developer, could accumulate enough resources for the initial investment and

withstand the long periods before the returns began to come in. Moreover, he dismissed the loan as a source of ordinary financing for the administration, insofar as it imposed a tax burden which would affect people who were not direct beneficiaries of the improvement. The council could not agree to those postulates, and sidelined them completely.

As far as the extension was concerned, Cerdà’s opinion only rarely coincided with that of the council’s. However, these agreements – when they did happen – were very important from the outset and throughout the process. As it was in keeping with his general principles of equity, Cerdà accepted that the local custom of free cession of thoroughfares and the layout of the streets by the owners be applied to the city’s outskirts, as a contribution in kind to an urban development which they would directly benefit from.

However, in strict application of that same principle of fairness, he developed different criteria from the municipal ones concerning the special contribution, which he considered an exorbitant charge. As regarding the use of the land freed up by the walls, he probably suspected that there was a wish to give the state, as owner, differential or, rather, unfair treatment: the cession of the land for purposes other than opening up streets. By excluding the loan, the special contribution and the value of the land on which the walls had stood, he left the municipal administration in a very difficult situation with regard to financing the public works.

As presupposed by the ratification of the plan of 31 July 1859, the owners of the outskirts immediately took the state approval of Cerdà’s plan as definitive. It met their hopes for immediate development of the new city, and they quickly agreed to discount the cost of the cessions from the profits.

A different matter entirely was the position of the owners of the interior when the government, in response to the municipal appeal against the Royal Order of 7 June 1859, issued another on 31 July of the same year, which included approval of the interior renovation. That part of the town planning operation to renovate Barcelona had not been mentioned in the first Royal Order, but would be ratified in the definitive approval of Cerdà’s plan on 30 May 1860.<sup>5</sup> In July of that same year, the owners of the interior fell in line with the council. It seems that they had not yet had full access to Cerdà’s economic plan, but they claimed to have some knowledge of it and were critical of the extent of the expropriation of the lateral strips, arguing that they infringed property rights. It may be that news had already arrived in Barcelona that the Ministry of Works, on 16 February 1860, had authorised Cerdà to carry out the studies for the renovation in Madrid. His work would materialise in a new report, *Teoría de la viabilidad urbana* (Theory of urban viability), which the engineer signed in January 1861.

### Posada Herrera’s bill and the return of competences to the council

The decree of 30 May 1860, which authorised the construction of the extension according to the alignments of the 1859 plan, was a triumph, both for Cerdà and the property owners of the outskirts. The materialisation of a confluence of interests can be seen in a circular from the governor, Ignasi de Llasera, dated 15 July, which included a very clear distribution of roles. The governor granted the work permits. Cerdà was the technician who produced the plan for the particular alignment of each property. And by obtaining the licence, each of the owners had to fulfil the commitments stipulated therein – i.e., the cession and layout of thoroughfares – and accept the limits on the height of the houses and the exploitation of the plot as specific ordinances or rules of the extension. Now that all the legal obstacles that had stood in the way of the building work had been removed, the private owners or promotion companies got down to work and took charge of the first phase of the extension.<sup>6</sup>

Meanwhile, two different processes – the passing of the state extension and renovation law promised by the central government and the gradual recovery of the role of the council – were set in motion and would evolve concurrently until they converged in late 1862.

At the end of 1861, an attempt to enact a law on town planning was launched. On a date which is difficult to determine, the local block – Cerdà and the others – had tied the fate of the extension and the renovation of the city of Barcelona to the enactment of an innovative law that would foster urban improvements all over the country. It was quite different from the path taken in France, where the state first legislated in favour of the capital, Paris, and then extended the benefits to the rest of the country. As Barcelona was not the political capital, it had to plead the general cause from the periphery in order to open the way for its own.

The procedure devised by the civil governor in July 1860 to grant the building permits was presented as a temporary solution while waiting for the law to be put before the Spanish Parliament. The presentation of the so-called Posada Herrera bill, in December 1861, was the fulfilment of the promise made by the O’Donnell cabinet. The Posada Herrera bill received much praise which was largely attributed to its adoption of Cerdà’s town planning ideas. It is closer to the facts, however, to say that the inspiration was broader. This is reflected in the fact that the new approach to expropriation, contained in article 10 of the bill, takes up the formula used for the renovation of Puerta del Sol, and not the expropriation of the lateral strips which, as we have remarked, was the option proposed by Cerdà.<sup>7</sup>

The discussion of the bill was an opportunity to play out the split between the Barcelona owners. The owners of the outskirts, favourable to the law in principle and led by Manuel Gibert, submitted amendments and tried to incorporate the practices consolidated in Barcelona – in particular the limitation of free cession for the thoroughfares 20 metres from the ordinary streets. The extra land for wider streets provided for in the official plan had to be expropriated through compensation and until that was paid the land remained in the hands of private individuals. The property owners of the old town, meanwhile, published a document that featured reproductions of the French texts of the 1852 decree and the 1858 ruling favourable to the owners’ demands – the latter not mentioned by either the council or Cerdà. They then dismissed the bill with a very simple argument: they considered it to be inspired by Cerdà’s economic plan, which they condemned as running counter to property rights.<sup>8</sup>

Owing to that and opposition from other quarters, the progress of the bill through Parliament was short-lived, and it was withdrawn on 1 July 1862. For a time it seemed that the government had abandoned its aims of passing the state law. For the country, as a whole, it meant the loss of a historic opportunity. In Barcelona the extension still lacked the support of a law to regulate it. Cerdà’s position, as a consequence, was weakened.

In May 1861, Cerdà congratulated himself on the apparent cessation of the confrontation with the council in a text that has been much quoted, but which is biased and unreliable.<sup>9</sup> Indeed, the confrontation continued unabated. The absorption of the municipal competences in the concession of the work permits by the faction formed by the governor and Cerdà is an example of advocacy, which is the process by which a higher body intervenes and resolves a matter which was being handled by a lower one with competence in the area. From a legal point of view, the legality or the requisites for a decision of that type have been much argued, but not their exceptional character. That is why, once a certain time has passed, the return of the competences to the body that holds them is imposed.

That return was activated by a provision of 7 September 1860, which transferred the management of the Barcelona extension from the Ministry of Works to the Ministry of the Interior. The change brought about a gradual normalisation of relations between the government and Barcelona City council. On the whole, this received popular approval as the minister of the Interior, José Posada Herrera, was the same man who had given his support to the council when it had clashed with his public works colleague in 1859. The project for the boulevard drafted by the municipal architect Miquel Garriga i Roca on 19 April 1861, as an alternative to Cerdà’s proposed ring roads,

was a sign of a return to the old municipal programme of 1853 and of the turnaround that was taking place.<sup>10</sup>

These two processes came together in the autumn of 1862. In September, once Posada Herrera's bill had been withdrawn, two royal orders recognised municipal jurisdiction over the extension and authorised a slightly reduced boulevard.

A chance event, however, brought further disruption when catastrophic floods caught the city unawares. Deprived of its fortifications and with no new development to replace them (Cerdà's ring roads and Garriga's boulevard were still very much at the drawing board stage) the old city was left with no means of holding back the waters. The floods threw into stark relief the fact that the ambitious preliminary public project of vital interest to the extension – the construction of a large main drainage channel designed to collect the water from the mountains and divert it from the development zone – had never actually been carried out.<sup>11</sup>

Having recovered its capacity for initiative, the council decided to begin work on the ringroad's main drainage channel, which meant first choosing which of the two designs should be applied. Santa-Maria tried to build bridges between Garriga and Cerdà and their respective projects but was ultimately unsuccessful. As shown by the reports sent to the civil governor in December by both Ildefons Cerdà – as advisor to the provincial authority – and Francesc Daniel Molina – just promoted to the category of provincial architect – there were strong suspicions that the government was reneging on its approval of the plan. This, in turn, opened up the possibility of modifying the plan with regard to the sensitive issue of contact between the two cities. The dismissal of Garriga and the council in both documents is proportional to the perception of that threat.<sup>12</sup>

With his customary determination, Cerdà stood again for the municipal elections and in November 1862 was returned as councillor. The catalyst for a new consensus was the accommodating attitude of Manuel Gibert, the prominent owner of the land in the ringroad area between Passeig de Gràcia and the present day Rambla de Catalunya. As the width calculated by Cerdà for the ringroad was 30 metres and he had still not been compensated for the extra 10 metres ceded, he blocked the construction of the main drainage channel and threatened to renege on the cession. The threat of a revolt by the owners jeopardised the continuity of the system created in 1860 and set back the start of work on the extension.<sup>13</sup>

With Cerdà back inside the council, the consensus between the public agents was rebuilt. At the instigation of the municipal extension committee, which the new councillor had joined, the civil governor enacted the obligations accepted by the owners in 1860 as a regulation of provincial scope.<sup>14</sup> The

measure split the property owners of the outskirts, or more exactly opened up an immutable chasm between their leader, Manuel Gibert, and the more active members of the association. Gibert, however, was still influential in Madrid and appealed against the regulation. They found in his favour and the enactment of the first state law on extensions of 29 June 1864 was brought forward.

In one of his last writings, Cerdà speaks of his dedication to the implementation of the extension and of how he had spent “his sleepless nights from June 1860 to July 1864 carrying out the free management of the works”.<sup>15</sup> The point is not to give an exact date, but to show the importance of the enactment of the law we have mentioned. Cerdà nevertheless continued as councillor for two more years and also served as an appraiser for the state as well as the engineer commissioned with marking out the land freed up by the demolition of the walls. This was brought to an end with his resignation the day after the presentation of the plan on 22 June 1865, which indicated which plots of land had been sold and which hadn't.

On 2 June of the previous year, Cerdà, as councillor, had presented a proposition to the plenary to build a square at the end of the Ramblas, which the council had been calling for since 1855 and which, as part of the boulevard project, had already been authorised in September 1862. Among other reasons, he adduced that the central government was well disposed to paying a low or even political price to help create a square, which had been a long-standing demand of the city and its citizens. It was a modification of the 1859 plan proposed by the author and a form of compensation for the frustration of the boulevard project, which the council had had to drop owing to the sale of the land freed up by the demolition of the walls at public auction.<sup>16</sup>

### State laws and Barcelona regulations

The 1864 extension law came into conflict with the rules that were being applied to the Barcelona extension. It declared the extension as a work of public utility for the purposes of the 1836 expropriation law and thus gave the public agents licence to acquire land for public works on payment of compensation to the owners affected. The cession of land for the streets and squares, no longer an obligation, had now become optional and was encouraged by tax breaks such as the waiving of increases in the contributions to be paid by the new properties. If there was no cession, those increases and any possible municipal surcharges became part of what was called “the extension fund”, at the disposal of the council, whose jurisdiction over urban development promotion was expressly confirmed.

The enactment of the new law brought a reaction from a majority of the property owners of the outskirts, who adopted a stance that left Manuel Gibert isolated. In October 1864 an owners committee produced and published a *Ruling and regulation project for the 1864 extension law*. It was an unusual document for the form it adopted (it contained a balance sheet of the development of the new city just three years after the process had begun) and for the convoluted formula with which it tried to maintain the specific rules for the Barcelona extension despite the stipulations of the law.<sup>17</sup>

Enacting a ruling of this type, followed by a regulation project, has a twofold intention: to show that the owners speak with authority gained from experience and to offer very precise rules for carrying out the urban development.

The balance sheet at the beginning of the development was positive and contrasted with Cerdà's view in mid 1861, when he denounced the halting of the building work and attributed it to the lack of mechanisms for reparcelling the land. Adopting a broader perspective and recognising the difficulties derived from the lack of proper legislation, the owners spoke of over 400 houses built or under construction in Barcelona, a respectable figure compared with the 1950s annual average – indicated by Cerdà's statistics – of forty houses.

The formula brought back the municipal proposal for payment of a special contribution in exchange for the concession of the works permits. Complications arose, however, from trying to use this single tool to tackle a diverse range of problems. These included the council's general lack of resources; the refusal of free cession by some of the owners; the blocking of the initiatives of the more enterprising owners on the grounds of a combination of the two previous factors; and the time lag between the moment when the council needed funds to pay for the expropriations and the moment when the development was completed and the resources granted by the extension law were made effective. Those were problems which Cerdà believed only a private company could solve. In the end, it was left to the owners to solve them, which they did adopting the principle that they were all interdependent and that, for reasons of equity, they all had to pay for the works permits sooner or later. Their goals were helped along the way by the fact that a group of owners disposed to free cession paid the money to the council in advance to open up the thoroughfares that would benefit them in the long run.

The effective regulation of the 1864 law was delayed until 1867. Once enacted, it only adopted a few rather technical indications from the property owners' proposals for the Barcelona extension, and accepted the possibility that interested owners could pay the council an advance on the money.

There were two later extension laws, in 1876 and 1892, which, without altering the philosophy of the original one, converged with the Barcelona

proposals. The regulation of the 1876 law is especially interesting: it set a procedure for making the cession of one fifth of the land required for thoroughfares obligatory and making the relevant tax compensations effective.

The law generated quite different, even opposing, applications in Barcelona. In the first years it served as an argument for a town planning reaction. Manuel Girona, the mayor in 1877 who held interests in the land for Plaça de Catalunya, tried to use the law to suppress the square. In its place, he proposed two diagonal streets of a certain width which would cross in the centre and which, covered like the famous gallery in Milan, would serve as the city's main site for luxury trade. Girona argued that all that could be done with the cession of one fifth of the land. In 1878, another conservative figure and long-time Barcelona city councillor, Domingo Call i Franquesa, tried to use the same law to save Plaça de Catalunya, although as a square of more modest dimensions. In the eighties, during his second and third terms, Mayor Rius i Taulet proposed a more imaginative application of the law, as part of another ambitious town planning policy. The Universal Exhibition was on the horizon.<sup>18</sup>

The most detailed example we have was the approach adopted to develop Rambla de Catalunya in 1886, which, it should be noted, was inspired by the regulation proposed in October 1864 by the owners of the outskirts in the wake of the enactment of the first of the extension laws.<sup>19</sup>

Rius i Taulet shared a raft of practical principles with the authors of the owners' regulation: the idea of a general community of the owners of an area, which would cover the costs in an act of solidarity; the principle of free cession of all the land required for the street and its subsequent development, for which the owners affected would be responsible; the determination to overcome the obstacles which the reticent owners were imposing on the owner-developers and the willingness of the latter to pay the council an advance on the money; and, lastly, the development of a mutual understanding between the owners and the municipal authority, especially in the persons of the mayor and the technician in charge of the project at the time, the engineer José M. Jordán.

The case of the Rambla de Catalunya development, which entailed digging an underground channel for the Malla stream, differs from the 1864 precedent in its adoption of a more pragmatic stance with regard to procedure. With the support of the association of owners of the left side of the extension, a majority of the owners of the Rambla de Catalunya land signed an agreement with the council before a notary to establish their respective obligations. For their part, the owners undertook to carry out the works while also accepting the technical and financial supervision of the municipal officials. The council, meanwhile, was responsible for the management of the



## Barcelona, 1853-1859: reshaping and extension

The process of modernisation of Barcelona gathered pace in the 1830s. Liberalism triumphed in the realm of social policy and leadership, industry had been mechanised and scientific thought took control. The reshaping of the old city and its extension could no longer be put off. Attempts to ignite the debate about the extension, however, were persistently hindered by the military which was determined to preserve the city's fortified walls.

The reshaping was modest and incomplete, although the confiscation of Church properties enabled some major operations. What was missing was a system of expropriation laws, which had proven a key instrument in the renovation of Paris.

In the 1850s the council promoted an ambitious urban reshaping plan and chose to break with the military. The citizens' demands for unrestricted extension won out in 1854 and 1859. On both occasions, Cerdà played a leading part, though his relations with the other leading players were constantly changing.

### The studies of the city

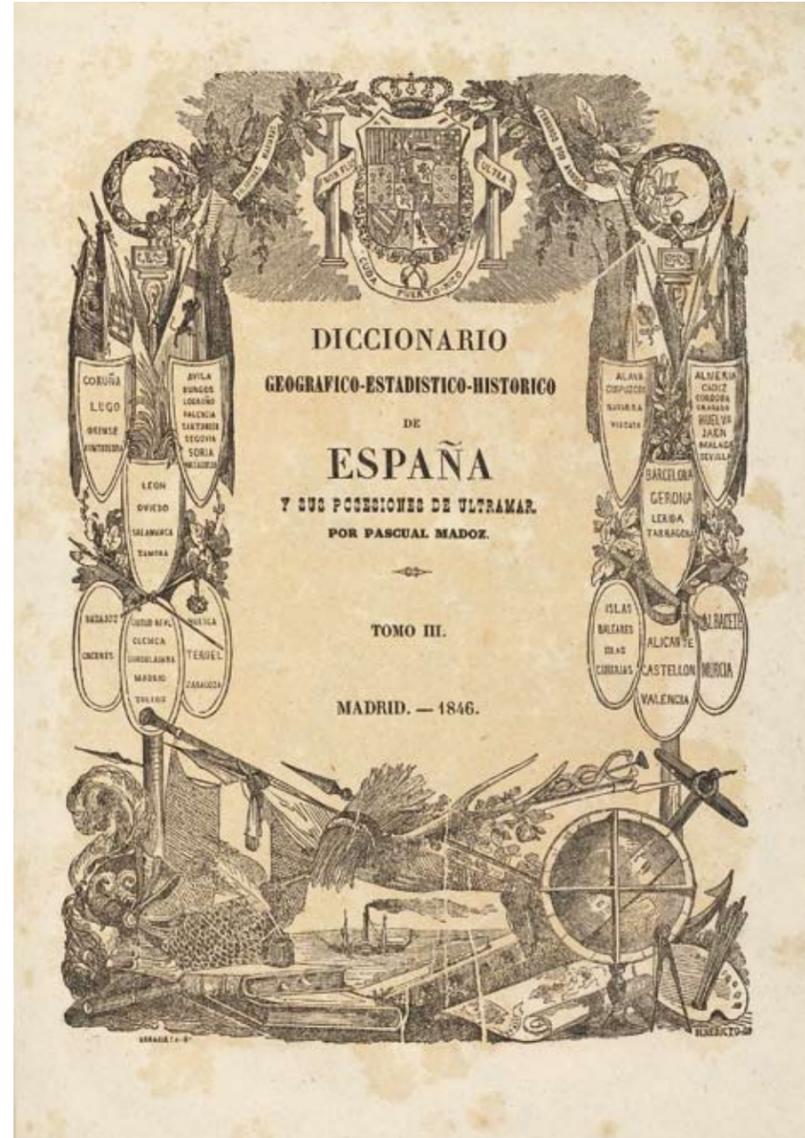
In Barcelona, as in the rest of Europe, society had become an object of scientific enquiry in the early 1800s. Instrumental in this process was the emerging field of statistics and a number of institutions were created to collect data and publish research. Leading sanitation engineers put forward hypotheses and solutions to one of the main causes of the high urban mortality rate: epidemics.

Cerdà, who had lived and worked in that milieu, was an ambitious man. He sought to create a new approach to town planning that would systematise knowledge as a strong basis for rational intervention. Addressing the issue of overcrowding – the primary cause of Barcelona's disproportionately high mortality rate – was the main challenge and the unquestionable justification for unrestricted extension.

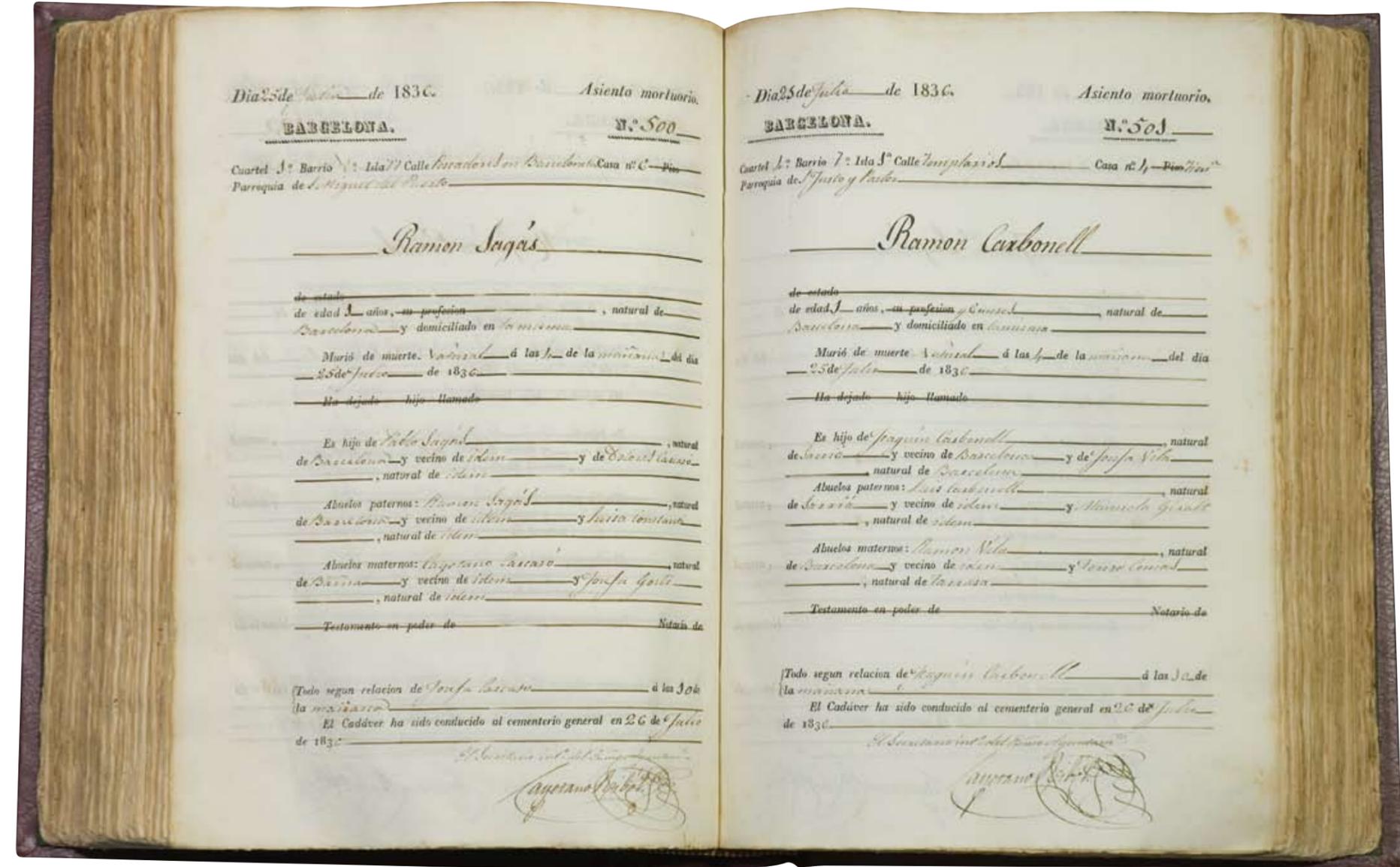
“Resuelto ya que el complemento del análisis urbano ha de ser la estadística de una urbe concreta, [...] no he vacilado ni un solo momento en preferir Barcelona a cualquier otra; ya porque a Barcelona han de aplicarse primera, principal y más inmediatamente los resultados de mis estudios, ya porque, habiendo vivido tantos años y ejercido repetidas veces cargos concejiles en ella, era la que más íntima y profundamente conocía.” \*

Ildelfons Cerdà, *Teoría general de la urbanización*, Barcelona, Instituto de Estudios Fiscales, 1968, vol. II

\* “Now that it has been decided that the complement of the urban analysis must be the statistics of a specific city, [...] I have not hesitated for one moment in preferring Barcelona to any other; both because it is to Barcelona that the results of my studies must be firstly, mainly and most immediately applied, and because, having lived there for so many years and held posts on the council on so many occasions, it was the one I knew most intimately and deeply.”



Pascual Madoz. *Diccionario geográfico-estadístico-histórico*, vol. 3, 1846, CHCM



Register of Deaths, book 1, 1836, AMAB

### Reshaping the interior

The municipal resources assigned to public works were scarce and spent mainly on maintenance and conservation. In 1836 a law was passed which made it compulsory to compensate owners before expropriating their property for reasons of public use.

In 1852 the city council had recourse to credit to finance the opening of Carrer de la Princesa, which would complete the transversal axis formed by Carrer de Ferran and Carrer de Jaume I. The project to build a wide, straight street, designed for trade, that connected the city's two tree-lined avenues, was a prime example of the paradigmatic shift taking place in the field of urban planning.

The square that was built on that street, now named the Plaça de Sant Jaume, became the new political centre of the city and reflected the growing importance of civil society and the neo-classical tastes of the architects of the period.

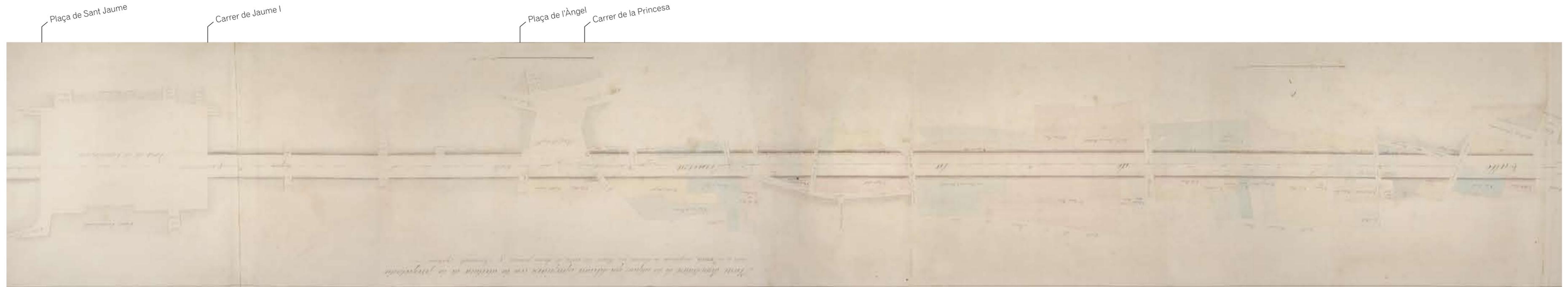
“Calles tortuosas y húmedas en las que ahora no penetran la luz y el aire, recibirán con esta mejora, salubridad y embellecimiento; las propiedades a la nueva calle contiguas verán aumentar sus rendimientos; el tráfico de los barrios que atraviere no será entorpecido por los rodeos que deben darse por sinuosas travesías.” \*

\* “With this improvement, damp, winding streets where neither light nor air enter now will receive health and embellishment; the properties adjacent to the new street will see their returns increase; the traffic in the districts it runs through will not be hindered by any detours along twisting alleys.”

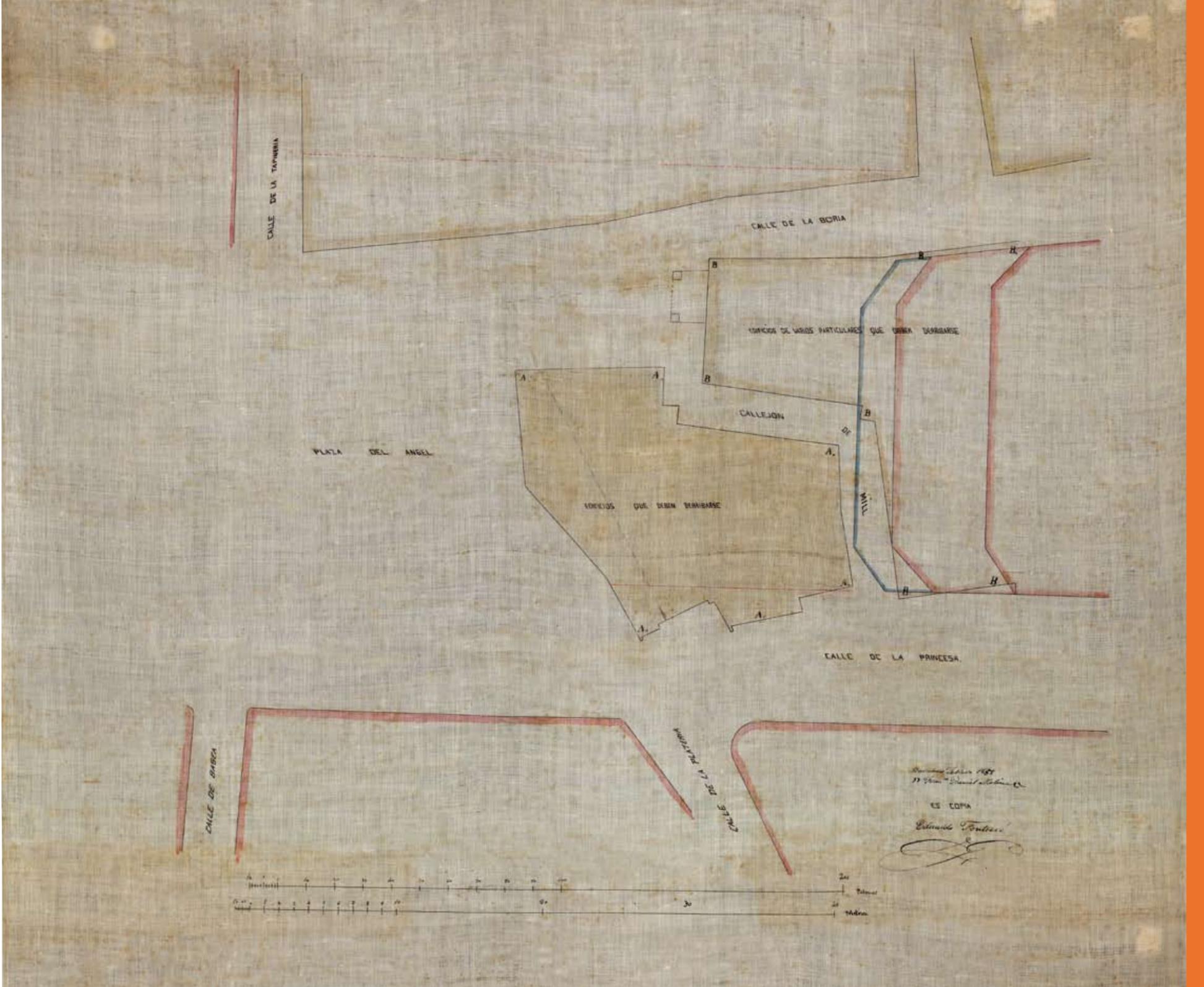
Public announcement of the opening of the subscription to a loan to finance the work, 19 February 1853

Josep Mas i Vila. Geometric plan of the city of Barcelona, 1842, AHCB





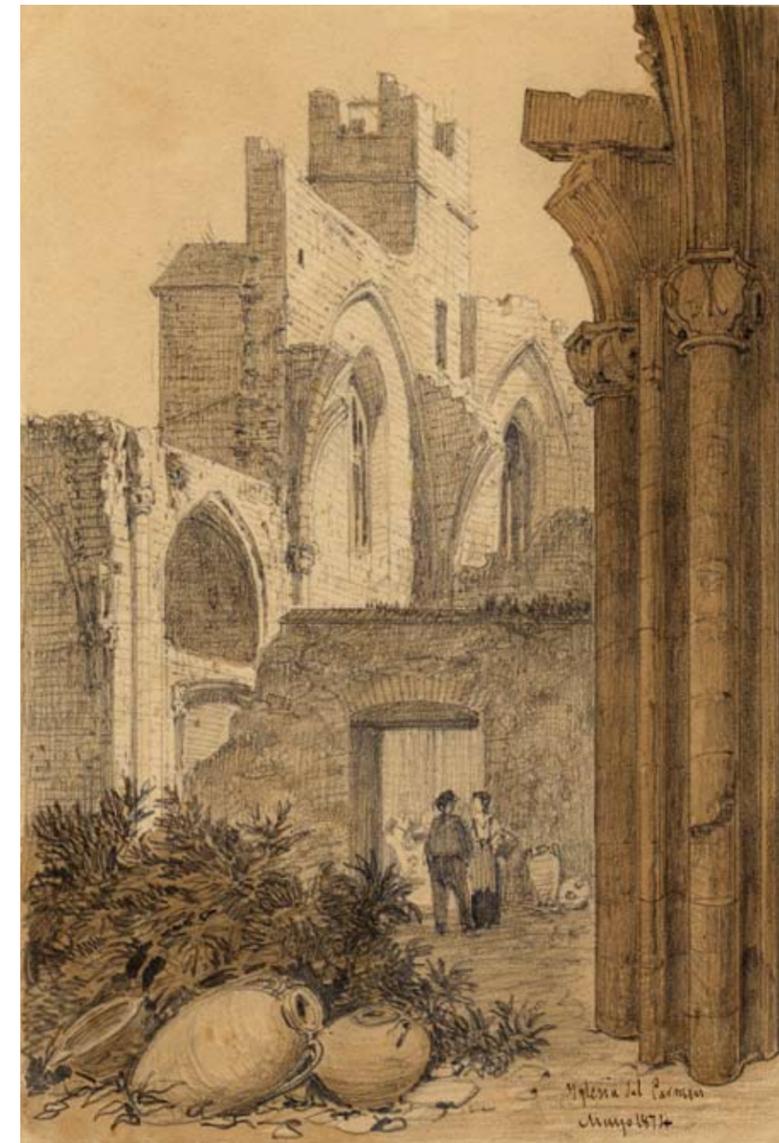
Francesc Daniel Molina i Casamajó, Josep Mas i Vila. Plan showing the buildings that had to be expropriated in Carrer de la Princesa, 1852, AHCB



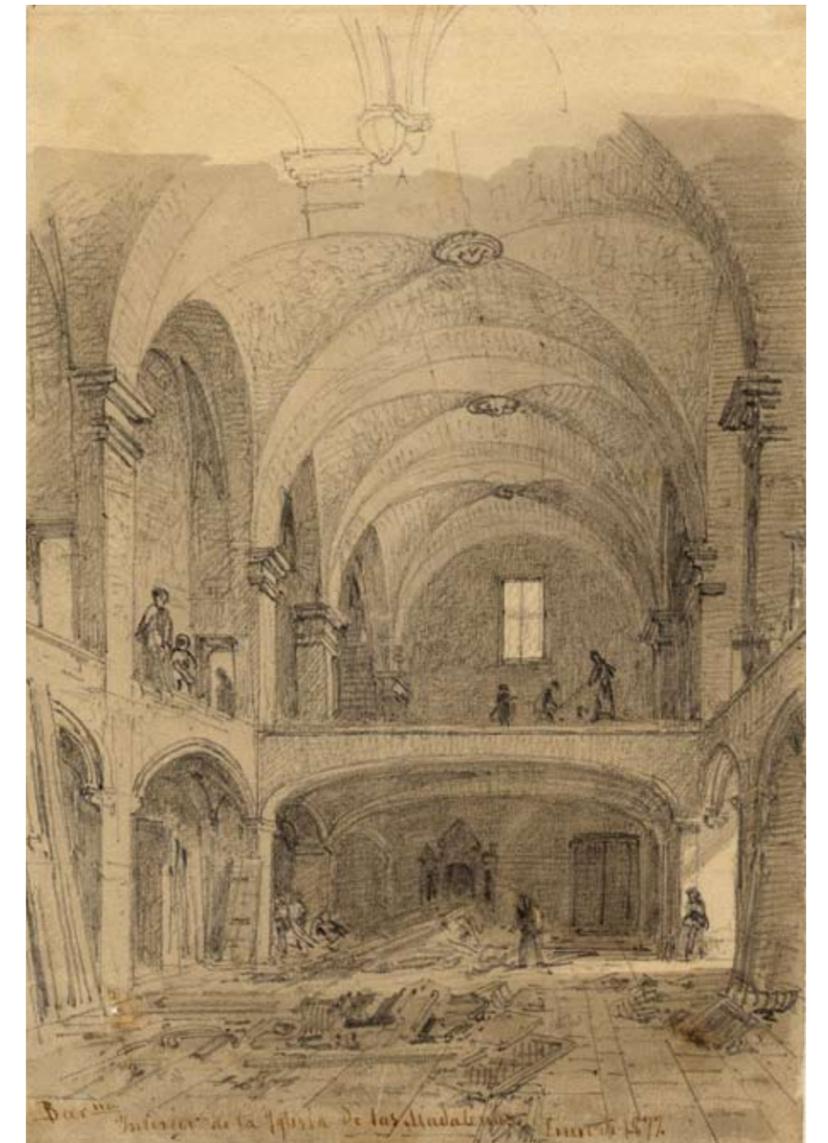
Francesc Daniel Molina i Casamajó. Plan of Plaça de l'Àngel, 1858, AHCB



Lluís Rigalt i Farriols. *Santa Maria de Jonqueres Convent*, 1869, RACBASJ



Lluís Rigalt i Farriols. *Carme Convent Church*, 1874, RACBASJ



Lluís Rigalt i Farriols. *Les Magdalenes Convent Church*, 1877, RACBASJ



Lluís Rigalt i Farriols. *Santa Anna Monastery Church*, 1874 (?), RACBASJ



Lluís Rigalt i Farriols. *Carme Convent Church*, 1874, RACBASJ

### The city agents

The council's law of 1845 divided town planning competences between the city, the civil government and the central government.

Town planning works were a municipal responsibility. The council defended its initiative and tried to consolidate its role in the 1850s.

The programme was laid down by the ruling class – the only social group with political representation – but the final approval of the projects was the prerogative of the supra-municipal institutions, which could arbitrarily block the implementation of the works. The council tried to prevent that from happening through a combination of negotiation and direct pressure, exerted by the Catalan lobby in Madrid.

“Parta, pues la iniciativa de los regidores del Ayuntamiento que conocen bien a su envidiado país y han merecido la confianza de sus electores; yo, que obtengo la del Gobierno de Su Majestad, estoy aquí para llevar a efecto los acuerdos que tomen, para remover los obstáculos que sus ideas encuentren y para sancionar la buena administración de los fondos del común.” \*

\* “Forward, then, with the initiative of the members of the Council who know their envied country well and have deserved the trust of their electors; I, who have obtained the trust of Her Majesty's Government, am here to implement the agreements they take, to remove the obstacles that stand in the way of their ideas and to sanction the proper administration of the common funds.”

Santiago Luis Dupuy, speech on taking up his post, 10 December 1851



S. Asenjo. *Santiago Luis Dupuy*, private collection

### Exiample: Unrestricted extension

Military and civilian technicians debated the extension throughout the 1840s, but their differences were irreconcilable.

The military proposed smaller extensions, in order to preserve the walls. The architects criticised the meagreness of those proposals and submitted more fitting and ambitious designs.

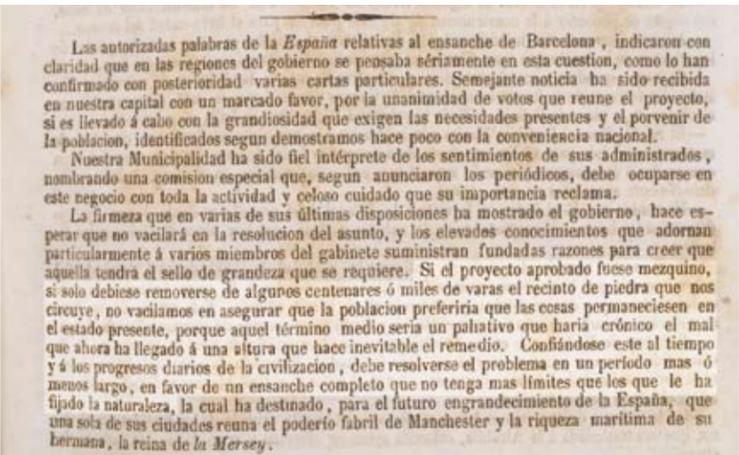
The decisive turn that closed the debate took place in 1853, when the civilian block – the council and the active population – agreed on a three-point programme: a) unrestricted extension; b) municipal ownership of the land on which the walls stood; and c) tree-lined avenues to replace the fortified perimeter.

The next step was to submit the programme to the central government in the hope that it would lend its approval.

“[...] Sus calles son estrechas, no existe sino una plaza espaciosa y dos que apenas merecen este nombre; dentro de su recinto sólo hay dos paseos, excéntrico uno de ellos y olvidado; los mercados tienen poca capacidad y desahogo; faltan buenos Hospitales; [...]; faltan locales para escuelas, [...], edificios para los establecimientos científicos y de recreo. ¿Y dónde se erigrán estos establecimientos, cómo se satisfarán aquellas necesidades si el ensanche de la ciudad [...] se concreta en un sólo ángulo de la población?.” \*

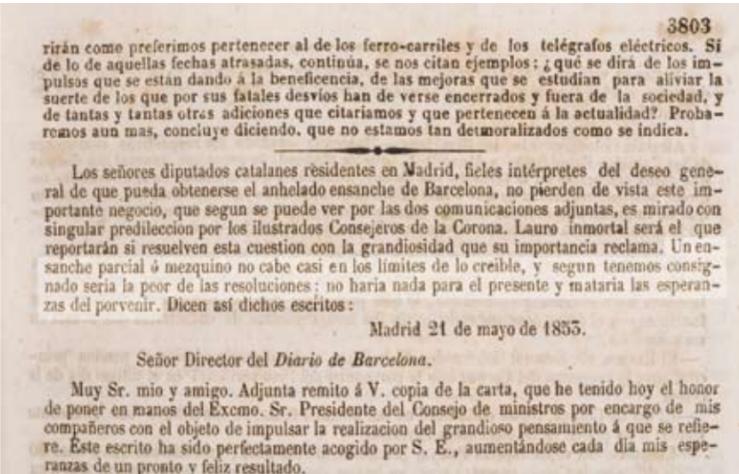
\* “[...] The streets are narrow, there is only one spacious square and two that scarcely deserve the name; within the precinct there are only two avenues, one of them eccentric and forgotten; the markets have scant capacity and space; there is a lack of good Hospitals; [...]; there are no premises for schools. [...], buildings for scientific and recreational establishments. And where will those establishments be built, how will those needs be satisfied if the extension of the city [...] is confined to a single corner?”

Petition to the Queen, 23 May 1853, drafted by Duran i Bas, secretary of Barcelona Council and the Special Extension Committee



Diario de Barcelona, 22 May 1853, p. 3663, AHCB

"If the project approved were mean, if it were only to move the stone perimeter that surrounds our a few hundred or thousand rods, we would not hesitate to say that the population would rather things stayed as they are [...] the problem must be solved [...] in favour of a complete extension that has no more limits than those imposed by nature [...]."



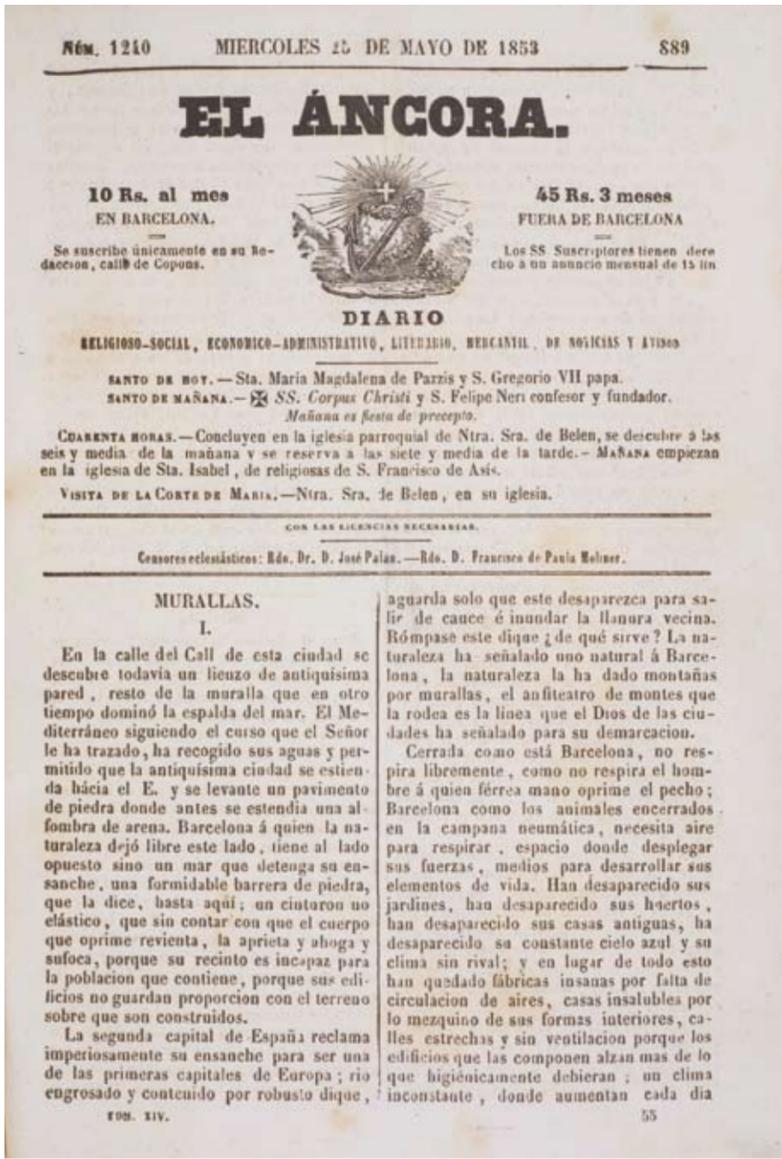
Diario de Barcelona, 28 May 1853, p. 3803, AHCB

"There is no room for a partial or mean extension within the bounds of the believable, and as we have put on record it would be the worst of solutions; it would do nothing for the present and would kill any hopes for the future."



El Presente, 22 May 1853, p. 3, AHCB

"[...] in the event that the project were no more than a partial and stunted extension, [...] it would do more harm than good to the general welfare and would in no way meet the needs of the people, industry and trade."

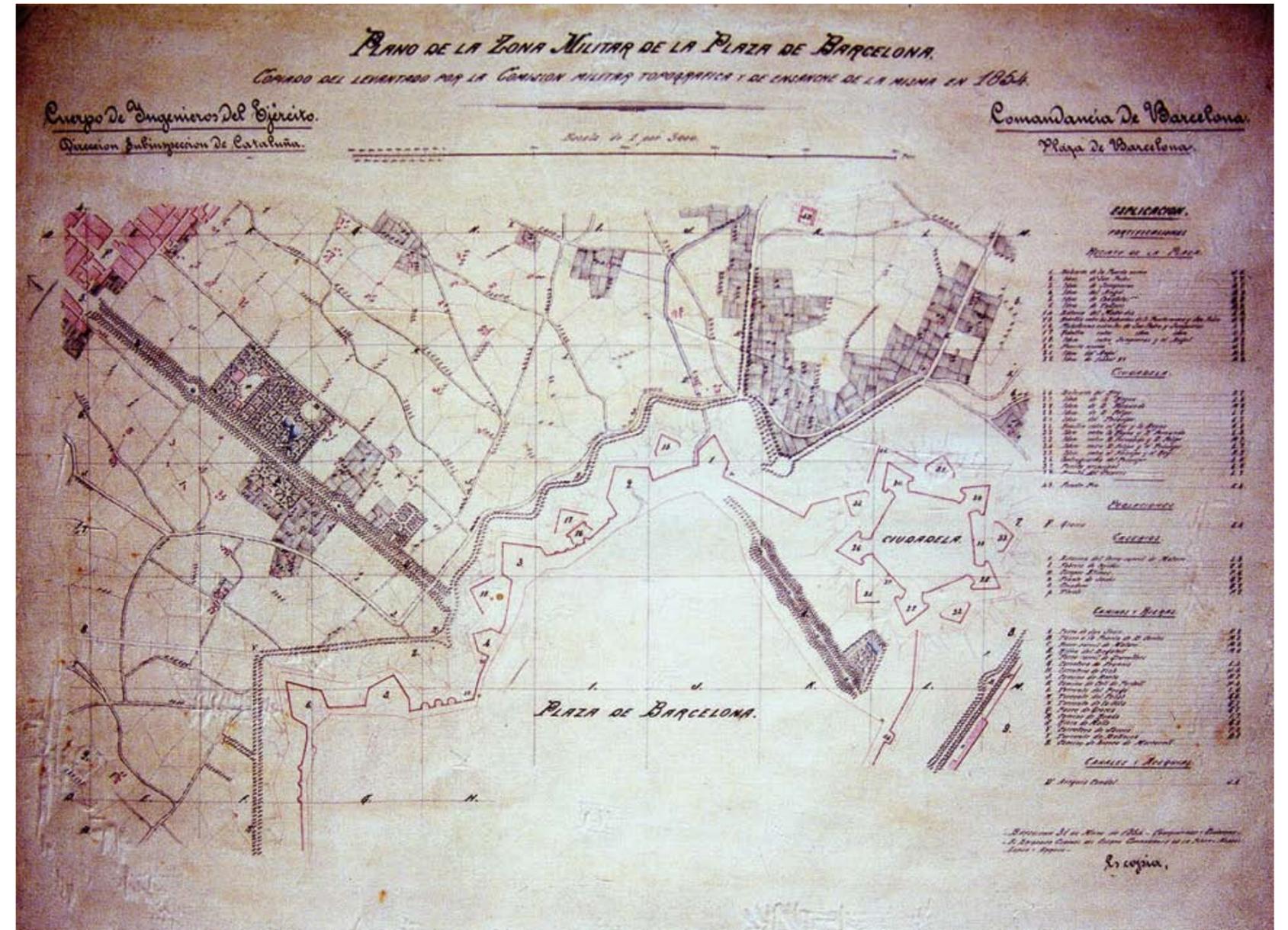


El Ancora, 25 May 1853, p. 890, AHCB

"Barcelona [...] will not be satisfied with a partial demolition and a limitation of the precinct that will enlarge it [...]. No, this is not the extension demanded by Barcelona, it needs to build a big city alongside the other one, it needs the whole plain it stands on and that is why it is asking for everything."



Miquel Garriga i Roca. Plan of the Barcelona extension, 1853-1854, AHCB



Army Engineers Corps, Barcelona Command Headquarters. Plan of the military zone of Plaza de Barcelona, 1854, CHCM



### A unique public programme

In 1854 Barcelona joined the progressive coup d'état and began the demolition of the fortified walls, ratified by the new government. The unrestricted extension programme was put into operation and the state financed the topographic plan of the outskirts of Barcelona, drafted by Cerdà in 1855.

The council and the civil government blocked a partial project submitted by the owners and defended the drafting of a general extension plan which would be open to public competition.

The rules of the competition, produced by a citizens' committee, and the preliminary extension project prepared by Cerdà were abandoned in 1856 with the return to power of the moderates.

“Levantarse ahora un plano general del nuevo caserío distribuyendo ya sus calles y plazas sería un absurdo porque habrá solares que dentro de dos siglos estarán como ahora y se perjudicaría a sus dueños sin objeto [...] Es pues evidente que el nuevo caserío de Barcelona debe depender de los planos parciales que se vayan formando y que se colocaran a su tiempo dentro del plano general del ensanche.” \*

\* “To draw up a general plan of the new suburb now, distributing the streets and squares, would be absurd because there will be plots in two centuries that will be the same as now and their owners would be harmed for no reason [...] So it is evident that the new suburb of Barcelona must depend on the partial plans as they are drafted and placed in due time within the general extension plan.”

Partial plans *versus* general plan



Lluís Rigalt i Farriols. *Road to the Old Cemetery*, 1875, RACBASJ



Lluís Rigalt i Farriols. *Sarrià*, 1870, RACBASJ



Ildefons Cerdà. Plan of the surroundings of the city of Barcelona drafted by order of the Government for the preparation of the extension plan, 1855, CHCM

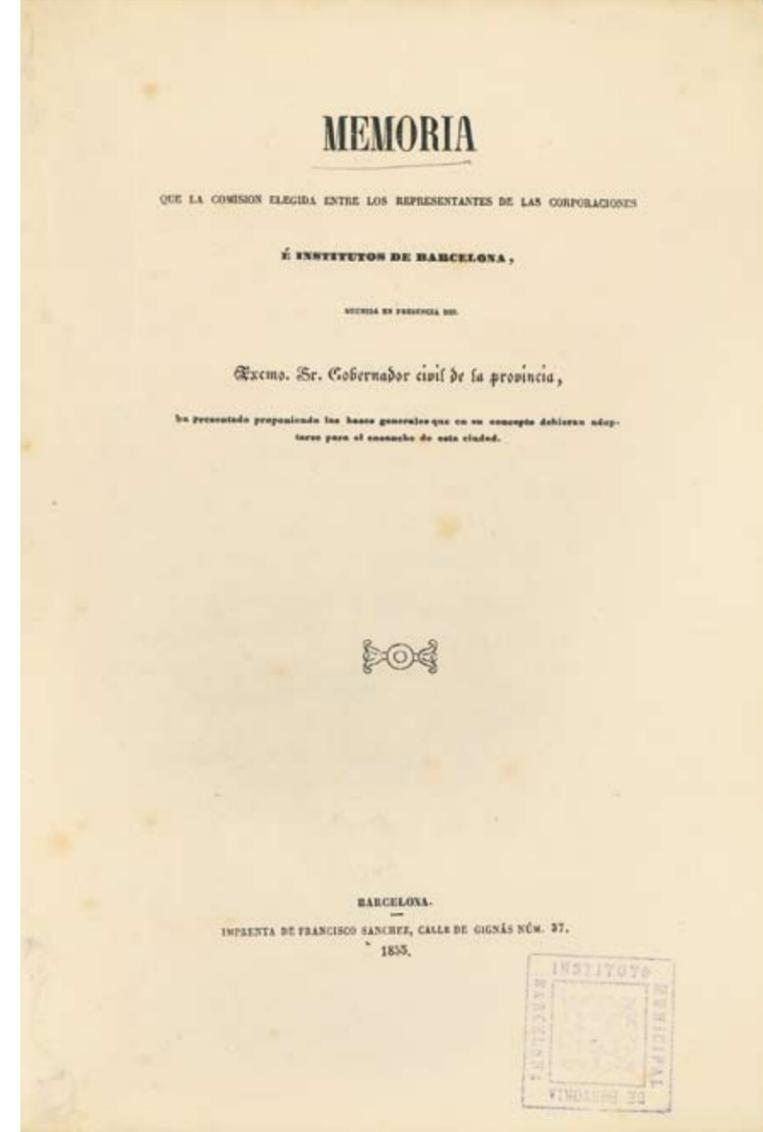


Ildelfons Cerdà. Report on the preliminary project for the Barcelona extension, 1855, AGA

**Clasificación** de las Casas, numero de personas importe del solar, precio é importe

	Promedio del n.º de personas que viven en el					CASA			Precio de la construcción y solares
						Solar			
	1.º	2.º	3.º	4.º	5.º	Superficie en m. c. u.	Precio por m. c. u.	Importe en R. n.	
1.º Casas de primer orden con 4 viviendas al frente de la calle, una sola habitación en el primer piso y dos en cada una de las restantes.	20	9	14	14	71	262,50	1555	479.975	1584
2.º Casas de segundo orden para las clases medias con 2 viviendas al frente de la calle, una sola habitación en el primer piso y dos en las demás.	10	9	12	12	55	226,70	250	216.635,1	1659
3.º Casas de tercer orden para trabajadores con una vivienda al frente de la calle y dos habitaciones en cada una de las otras.	6	10	10	10	36	113,35	275	22.060,4	327
4.º Casas de cuarto orden para gente menuda que vive con sus habitaciones en los bajos y cuartos en cada una de las demás.	6	10	10	10	70	113,35	210	24.630,5	327
5.º Casas de una sola planta en la Barceloneta con dos habitaciones que sea el terreno comprado de distinto terreno al que viene.	12	12	12	-	36	70,50	1530	3.090,9	452,51
6.º Casas de la categoría anterior en el barrio que se ha de formar en la Barceloneta.	12	12	12	-	36	70,50	263,65	12.794,50	452,51

**Notas:** 1.º Las dimensiones que se dan de un C.º Solar ó C.º de habitación son de 5,50 por 19,50 m.  
 2.º El importe de la construcción de las casas se disminuye por unirse muchas de ellas y se divide el importe de la obra por el número de viviendas.  
 3.º Según la tabla que antecede, corresponden 103 personas por cada habitación de las de la Barceloneta por tres viviendas.



Report ... proposing the general guidelines for the extension, 1855, AHCB

- 4 -

RELATIVAMENTE  
INDEPENDIENTE

la ciudad antigua  
la ciudad antigua

- Insiguiendo las principales vías de comunicación que hoy existen, como las calles del Conde del Asalto, San Pablo, Hospital, Carmen, Rambla, plazas de Santa Ana y de Junqueras, calles de San Pedro y Princesa.
- Insiguiendo las nuevas calles que pueden abrirse, como la prolongación de la calle de la Union formando una vía recta que desde el extremo de la de la Princesa atraviese la ciudad antigua, otra calle recta que vaya a parar frente la Catedral, etc.
- Armonizando la dirección de las nuevas calles con la que siguen los ferros-carriles hoy existentes; pero de suerte que junto a estos no haya vía pública, sino los patios ó jardines interiores de las casas cuya entrada sea por el lado opuesto.
- Relacionándolas con las poblaciones vecinas.
- Las calles, respecto á su construcción, deben ser;
  - Rectas con puntos de vista naturales, como el de alguna de las montañas vecinas;
  - Rectas con puntos de vista artificiales, como el de algun paseo ó monumento público;
  - Curvas, pero estas en corto número y solo como grandes vías de circunvalación.
- Las calles, respecto al ornato público, deben ser;
  - Porticadas, con árboles en el centro y aceras laterales;
  - No porticadas, con árboles en el centro y jardines ó patios delante de los edificios;
  - De forma regular, con árboles en el centro y jardines laterales en cada casa;
  - De forma regular y con árboles en el centro;
  - De forma regular y sin árboles.
- Las calles deben tener el ancho, las de primer orden, de 120 palmos, y las de segundo orden ó sean las transversales, de 60.
- Las plazas, respecto á su construcción, deben proyectarse como:
  - De confluencia, las que estarán enteramente despejadas;
  - De reunión, con pórticos al rededor;
  - De desahogo, con obras monumentales, fuentes, jardines ó árboles en el centro.
  - Mercados;
  - Bazares.
- Las plazas, respecto á su situación y su número, deben proyectarse atendiendo á las necesidades de cada zona natural de la nueva población



### Two public programmes

The new Liberal Union cabinet granted Barcelona the right to unrestricted extension in December 1858.

At the request of Cerdà himself, the Ministry of Works authorised him to produce the studies for the extension plan on his own account. The council – with the endorsement of the civil government and the participation of the citizens – threw open the extension plan for public competition. The plan now included the revised bases of 1855 and the incorporation of the reshaping of the old city. Before the competition was awarded, however, the government approved Cerdà's project, which had also incorporated renovation plans for the old city.

The council subsequently lodged an appeal for the annulment of the government decision. At the same time, the owners of the outskirts withdrew their partial extension project and gave their support to Cerdà, in order to begin building work immediately.

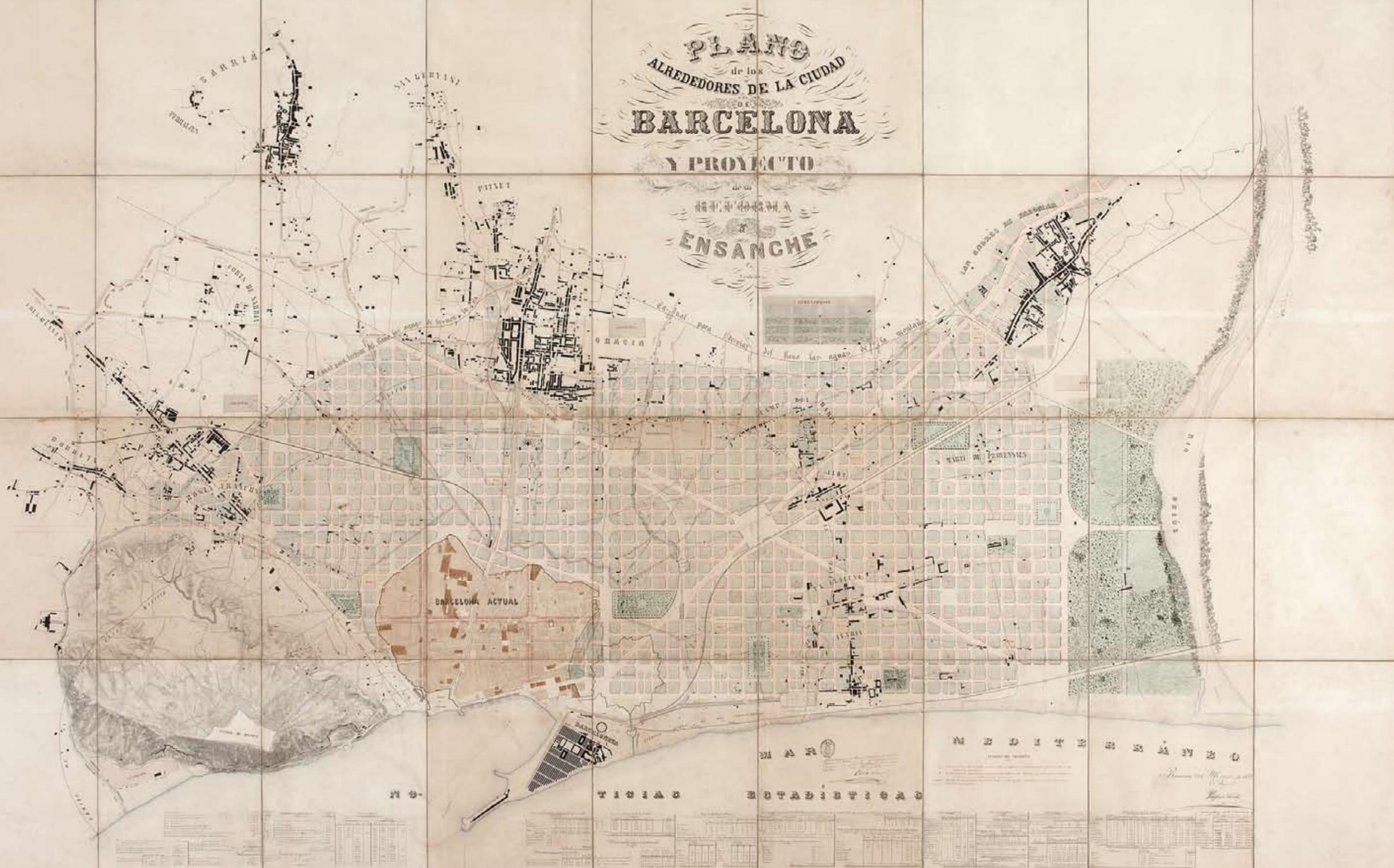
“Es indudable, Señora, que el ensanche de Barcelona a nadie en primer término interesa sino a esta misma ciudad, que tiene su razón de ser, que tiene vida propia, como la tiene un individuo; ella debe pues darse cuenta de su existencia, ella está en el deber de conocer y apreciar las condiciones de su desenvolvimiento, de su desarrollo moral y material, porque según sean éstos, se afianza o destruye su porvenir, se consolidan o caen por tierra los inmensos gérmenes de su prosperidad y pujanza actual y futura.” \*

\* “There is no doubt, Madam, the Barcelona extension is of primary interest to no one but the city itself, which has its own *raison d'être*, its own life, just as an individual does; it must therefore be aware of its existence, it has a duty to know and appreciate the conditions of its evolution; of its moral and material development, because depending on what those are, its future is guaranteed or destroyed; the immense seeds of its prosperity and its present and future success flourish or fall to the ground.”

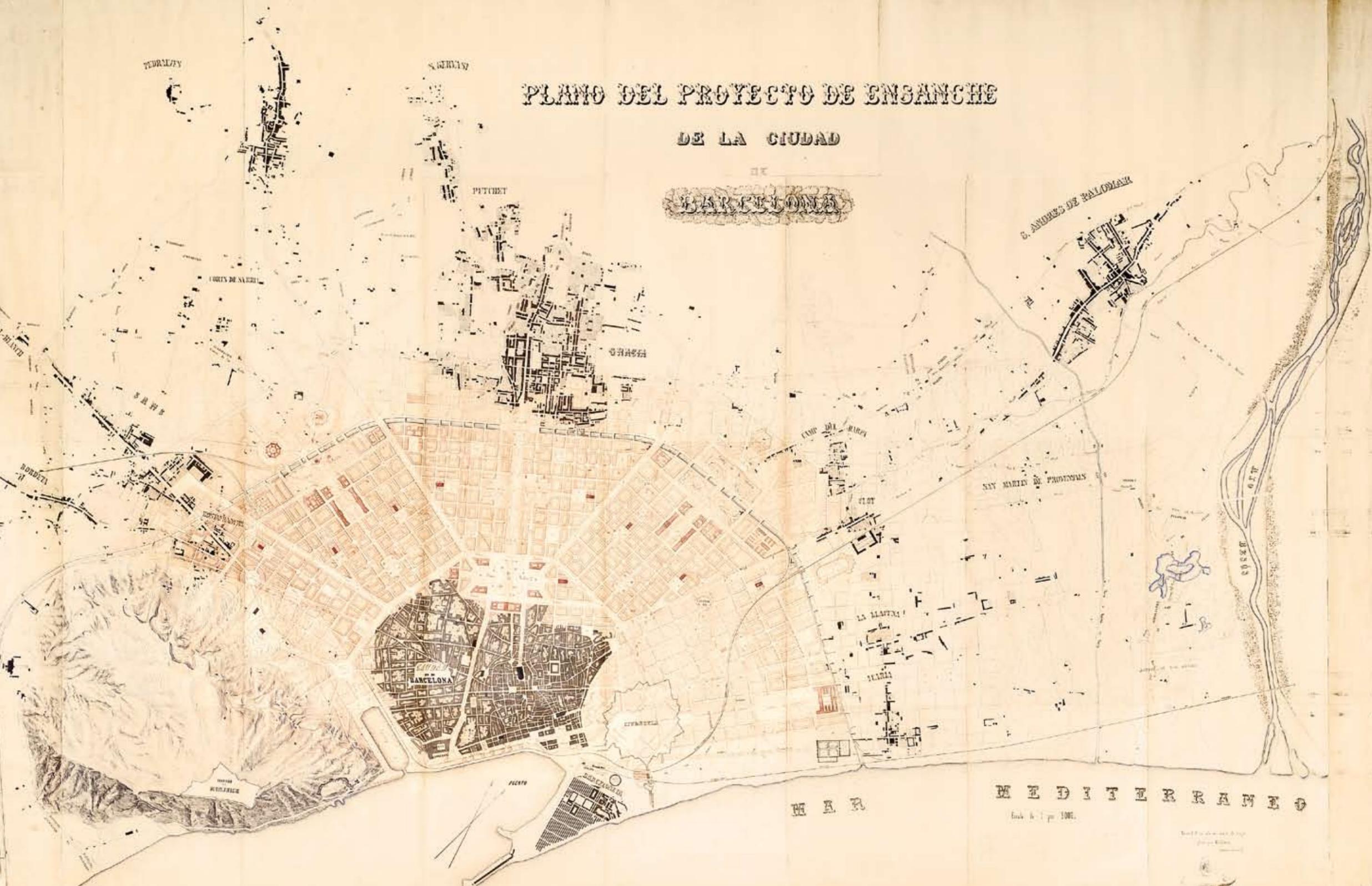
Petition by the Council demanding the repeal of the Royal Order of 7 June approving the Cerdà Plan, on 9 July 1859



Miquel Fluixench. *Josep Santa-Maria i Gelbert*, 1868, private collection



Ildelfons Cerdà. Plan of the surroundings of the city of Barcelona and renovation and extension project, 1859, RABASF



Antoni Rovira i Trias. Plan of the city of Barcelona extension project, 1859, AHCB



August Brauneck. General view of Barcelona, 1860, RB



Lluís Rigalt i Farriols. *Plaça de Sant Sebastià*, 1867, RACBASJ

## Against density. The hygienic city and the town planning of extensions

Francesc Muñoz

### The concentration city and town planning against density

19th-century town planning was a town planning of densities. It came into being as a response to the urban conditions created by the extreme concentration of inhabitants and buildings in cities and it evolved by negotiating a fine line between two conflicting positions: first, the defence of a rational and scientific insertion of the industrial city into the territory which it was itself constantly colonising; and second, the temptation to reject the big city, the metropolis, in defence of a utopian urban community, a New Arcadia, which inspired the idealisation of country and farming life. Both approaches shared a common goal: to control urban density.

However, the wide range of ideas heralded by the emerging town planning revolution not only aimed at the reduction of the thresholds of concentration; they also shared an ambition to introduce regularity and order into the city landscape. It is clear that excessive urban density brought a whole series of problems and anxieties, the most significant of which was high mortality. In addition to alleviating these chronic problems, 19th-century town planning sought to address the confusion and ambiguity fostered by the functional promiscuity of urban spaces. In reality, it was merely taking up some of the anxieties which the industrial city, the concentration city, aroused in the eyes of the observer. This fragment from *The Man of the Crowd* by Edgar Allan Poe is a case in point:

The stranger paused, and, for a moment, seemed lost in thought; then, with every mark of agitation, pursued rapidly a route which brought us to the verge of the city, amid regions very different from those we had hitherto traversed. It was the most noisome quarter of London, where every thing wore the worst impress of the most deplorable poverty, and of the most desperate crime. By the dim light of an accidental lamp, tall, antique, worm-eaten, wooden tenements were seen tottering to their fall, in directions so many and capricious, that scarce the semblance of a passage was discernible between them. The paving-stones lay at random, displaced from their beds by the rankly-growing grass. Horrible filth festered in the dammed-up gutters. The whole atmosphere teemed with desolation.<sup>1</sup>

The profusion of adjectives with which Poe constructs this *in crescendo* of repulsion at the suburbs of London hints at the road map of hygienic town planning, which is the subject of the following lines: the city is noisome because it is a concentration of densely populated, ageing districts, with “tall, antique, worm-eaten, wooden tenements”, where hardly a ray of light penetrates. It is particularly important in this sense that the references to overcrowding and congestion – “horrible filth festered in the dammed-up gutters” – and the metaphor for the quality of the air – vitiated by the poverty of the place – are associated with the image of density. A density which is appalling not only for the lack of free space – “scarce the semblance of a passage was discernible” –, but mostly for the disorder and promiscuity of a fabric where the dwellings are arranged “in directions so many and capricious”.

It is not by chance that the hygienist doctors of the 19th century, obsessed with the excessive urban density of the cities which continued to sprout and grow, insisted so strongly on the accumulation of different kinds of matter as the main attribute of density, with continuous references to the maximum mixture “of genders and species”. At a time when population density was such a central issue in town planning, its concerns are naturally linked to the concentration of the urban space which urban agglomeration made so evident. But most of all, the hygienist doctors emphasized how conditions of excessive density left their mark on a city already experiencing economic, social and political upheaval, leaving in their wake a place of total confusion and disorganisation, where the blurring of boundaries had become commonplace. Such rampant urban growth was therefore completely at odds with the positivist ideal which, through taxonomies and classifications, aimed at imposing clarity and hierarchical organisation on each of the parts that made up the whole.

No doubt that is why the urban renovation projects, which heralded the emergence and development of town planning, always strove to endow the city with a new readable, clear and stratified structure; a new urban mould that not only enabled rational urban development through the application of geometric models, but also, and primarily, made it possible to order and segregate. The desired goal was to replace the confusion which density generated in the city with a greater degree of clarity in the separation between what was built and the streets, via the application of the geometrical line, the grid and perspective. The early town planners also sought to contain the contamination between interior and exterior spaces by more clearly defining the boundary and threshold between the two; and to correct the promiscuity of uses by clearly marking out the transition between public and private spaces.



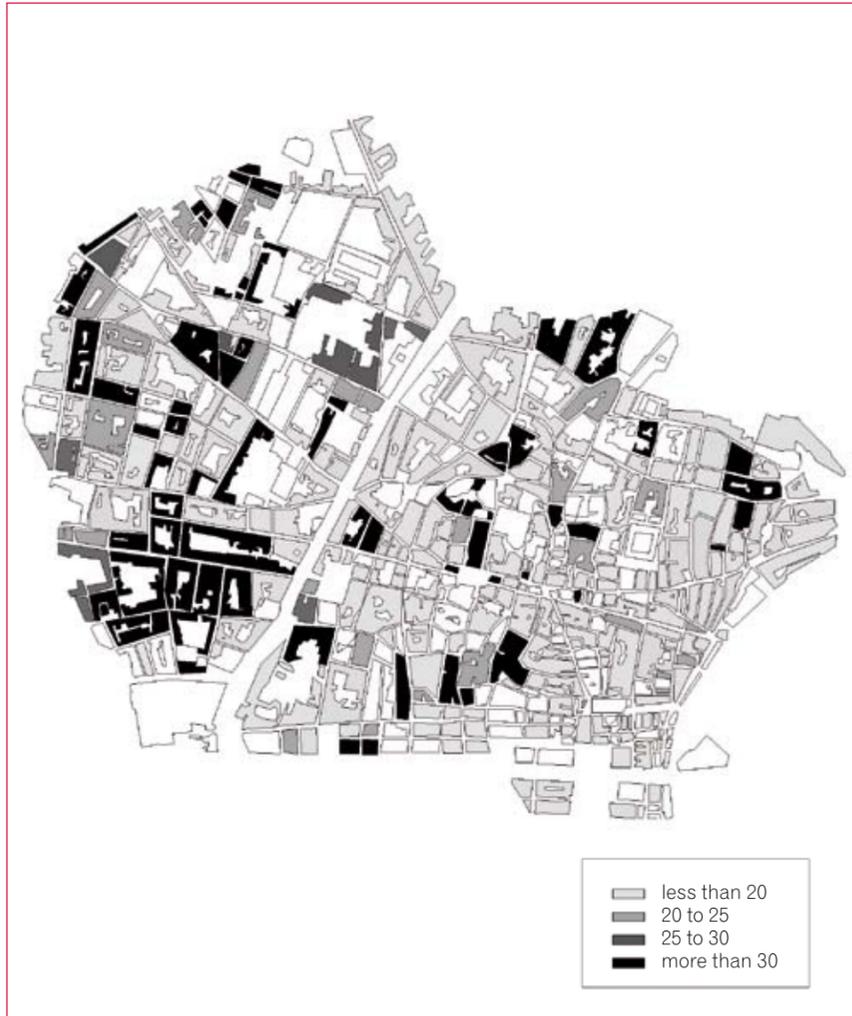
Density of persons per dwelling in Barcelona (1859).  
Average values on the first floors



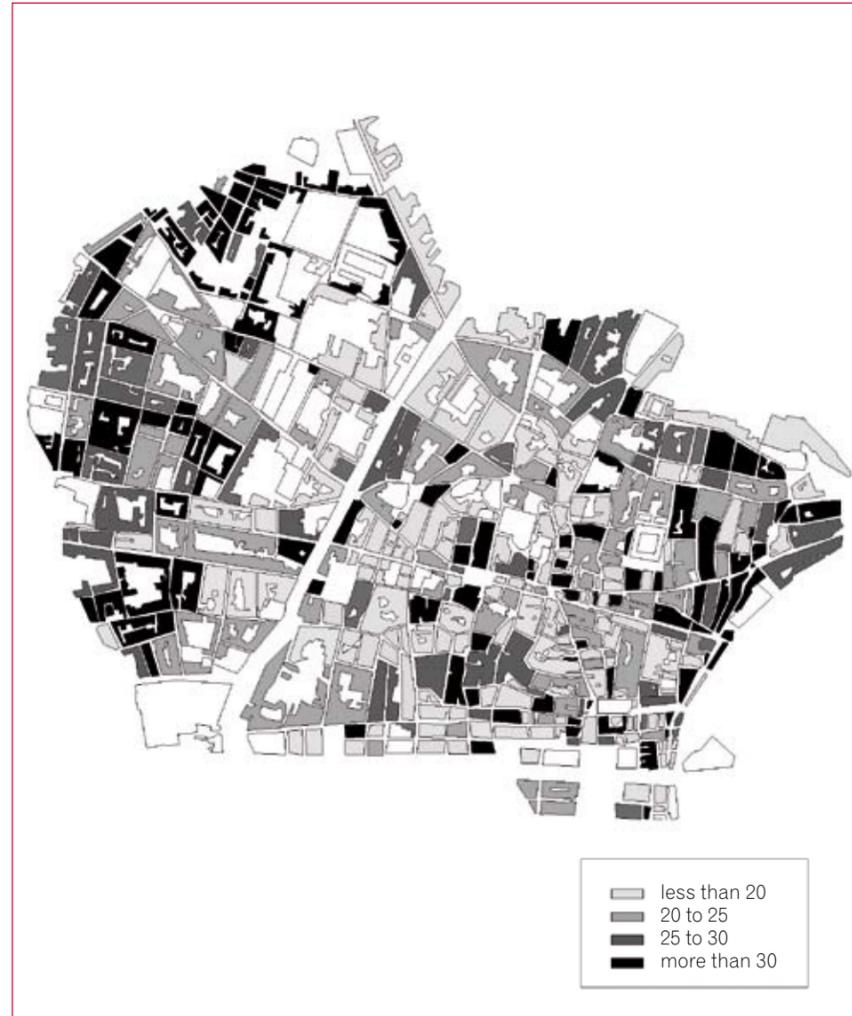
Density of persons per dwelling in Barcelona (1859).  
Average values on the second floors



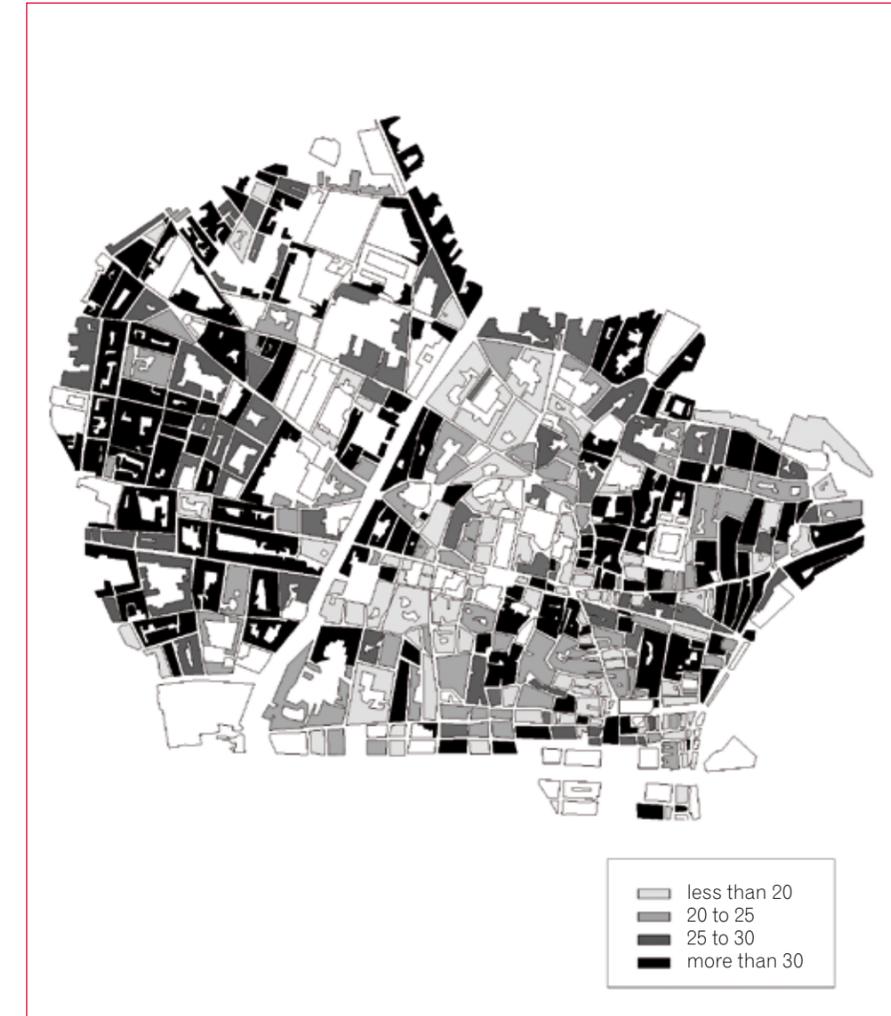
Density of persons per dwelling in Barcelona (1859).  
Average values on the fifth floors



Mortality rate (per 1,000) in Barcelona (1856-1865).  
Average values on the first floors



Mortality rate (per 1,000) in Barcelona (1856-1865).  
Average values on the second floors



Mortality rate (per 1,000) in Barcelona (1856-1865).  
Average values on the fifth floors

The new city proposed by early town planners was indeed less dense, but it was also, on the whole, more malleable, more visually transparent and more functionally segregated.

It is true that the middle class ideal of representation called for an improvement in urban visibility, to bring out the new social spaces which then constituted the privileged milieu of the *flâneurie*. But in the early town planning movement's obsession with density there was something deeper, linked no doubt to the great hygienist town planning hobby horse: the association between density and mortality.

### The hygienist paradigm: the link between density and mortality<sup>2</sup>

In 19th century urban Europe, hygienist doctors unleashed a discourse against the city which underscored the extremely high mortality rates resulting from urban growth. They also identified the degrading conditions that arose from increasing urban density: the exponential growth of the population in a single space inside the city walls; the constant subdivision of the properties, which gave rise to dwellings with an ever smaller surface area; the general increase in the height of the blocks as a consequence of the shortage of new land for building on; the overcrowding of existing housing; and, lastly, a chronic lack of public spaces in a city bedevilled by agglomeration and the total absence of infrastructures and services. The same argument united doctors, architects, engineers, Galenic physicians and fledgling town planners, alike.

The fact is that Hippocrates' legacy was still very much present in 19th-century medicine. The environmentalist and determinist explanation of disease was also reinforced by the conception of air quality, which was still current in medicine. This approach understood air to contain all the substances expelled by bodies and matter, both organic and inorganic.

The "airist" obsession which Alain Corbin<sup>3</sup> speaks of is derived from that medical conception. It includes two overriding ideas: first, the fusion of the emanations in the atmosphere and second, the need for the movement and circulation of air as hygienic imperatives. Both ideas appear to have been adopted by the critics of urban density. And so, on the one hand, the ordering of urban spaces aimed to put an end to the excessive density of the places and the promiscuity of uses and users while on the other, the new building typologies and the lines of the thoroughfares were to take account of air circulation and the need for ventilation.

The hygienist view cited the mixture of genders, matter and organic waste – all omnipresent in the urban environment – as the origin of disease. In effect, that meant identifying density as the primary and sufficient cause of the conditions that gave rise to the risk of contagion. The occurrence of episodes of extreme mortality, such as the four cholera epidemics that

decimated the population of the main European cities between the 1830s and the end of the century, lent further credence to that link.

### The solution to mortality: urban renewal and the extension

The "airist" paradigm was a crucial part of hygienist medicine for almost a century, as shown by the reflection on and discoveries about ventilation. Monographs and comparative studies of cities were produced, containing indicators such as the volume of breathable air per room in houses; an indicator which Ildefons Cerdà himself calculated for Barcelona and expressed in the form of the cube of available air or "ration of atmospheric air" in the city's dwellings. A range of solutions were tried, such as centrifugal force ventilators, which released a regular current of air; and the construction of vaults and the widening of doors and windows in buildings. This broad series of technical innovations would eventually culminate in the creation of the sewage system.

But those first public hygiene strategies had to negotiate with the harsh reality of declining health conditions associated with the densification and overcrowding of dwellings in the cities. Undoubtedly the most radical reflection along these lines were Ildefons Cerdà's works expressed in *Teoría de la construcción de las ciudades* (Theory of the Construction of Cities), 1859, and *Teoría general de la urbanización* (General Theory of Urbanization), 1867, which he wrote to support his proposal for the Barcelona extension.

In those writings his thoughts about how the conditions of extreme density were the root of the environmental and epidemic crises that scourged the city in the first period of industrialisation are quite clearly environmentalist in inspiration. The cause-and-effect connection between urban density and mortality is cited as the main justification for the renovation of the city and the construction of a new extension:

To have a clear idea of the density we live in, as well as putting on record that science sets a minimum of 40 metres of surface area per person in cities, I may be allowed to present the following comparative study of the specific population of several cities [...] [Here there is a density table for fourteen Spanish, European and American cities, of which Barcelona is the densest.] It should not come as a surprise, therefore, that despite Barcelona's beautiful climate, its mortality rate compared with that of the other countries, in ordinary circumstances, leads to the sad result that can be seen in the following table [...] [Here there is a list of mortality rates for twelve European and American cities, of which Barcelona has the highest]. [These figures] summarise all the administrative, economic and hygienic contradictions; all the misery which Barcelona, with its beautiful climate, its advanced civilisation, its industry and its wealth, infests in the houses of its inhabitants [...] We shall observe that light,

the source of all life, does not penetrate into those houses, there is not enough space to move around and, more than that, there is not even air to breathe. This cannot be described as living in houses subject to the rules which, especially to the benefit of public health, are established by civilisation.<sup>4</sup>

The direct relation between density and mortality, partly expressed in the cause-and-effect link of air quality, appears even more clearly in some fragments of the *Teoría general de la urbanización*:

To be specific about the ration of atmospheric air, we shall observe that whilst science establishes an indispensable quantity in the bedroom of between 6 to 10 cubic metres per person per hour, society carries its greed to the point of not allowing us more than an average of 3.6 cubic metres for the well-to-do classes and 1.17 metres and even 0.90 metres for the poor. Let us also note, to bring out the unjustifiable contradictions of our society, that whilst the tenants of the lower floors pay 10.53 reals a year, those on the upper floors pay 13.50 reals [...] The insufficient quantity of breathable air, or its alteration by a mixture of gases unsuitable for breathing, are the two conditions that give rise to most of [our diseases. Asphyxia]. Consumption, asthma, a predisposition to most of those epidemics, and that state of physical and moral apathy, especially in the poor classes, recognises no causes other than the vitiated atmosphere of those unhealthy dwellings where society is condemned to live.<sup>5</sup>

In *Teoría general de la urbanización*, Cerdà launches into a ferocious criticism of the living conditions of the population in the industrial city, in which he refers in particular to process of subdivision of the property and overcrowding of dwellings. In the well-known monograph of statistical data that accompanies the third volume of the work, there are statistics for the population living, floor by floor, door by door, in each house in the city.

This invaluable information also includes specific data for general mortality and the cholera epidemic that ravaged Barcelona in 1865. With Dr Anna Cabré, we have analysed that information in a number of investigations and have produced the cartography of the density and mortality which, in his day, Ildefons Cerdà could not include in his work.<sup>6</sup>

The density and mortality maps shown in this book reveal that major differences were indeed recorded in mortality patterns according to the level or the storey on which the population lived. And so the main floors, where only the owner of the building lived, show the lowest mortality rates, whilst mortality above the first floor reveals an exponential increase that becomes general in the case of the top floors.

This difference in the mortality rates according to height corresponds to a very similar pattern in the distribution of the occupation densities of

these dwellings, so that we can see a process of selective densification and height in the Barcelona of 1859.

Therefore, it was not only the medical ideas current at the time that attributed the liability for the contagion of diseases and the high mortality to density; the empirical evidence available also emphasised the correlation between high density and high mortality in the urban space.

It is obvious to today's observer that the cause of the high mortality on the upper floors was only indirectly linked to population density. The likelihood is that it was rooted in the fact that the constant subdivision of the buildings and the storeys – the "shredding" of the inhabited spaces, in Cerdà's words – had meant that the cubicles of those upper floors, smaller in surface area and therefore more economical, were occupied by a population with fewer resources. What is more, they were entirely dependent on manual work to earn a living wage which, as Cerdà himself points out in his monograph on the working class, was not enough to provide a regular supply of protein-rich food. It would be fair to conclude, therefore, that it was a more vulnerable population, affected not only by diseases but also by loss of life resulting from causes that took just as great a toll as the epidemics.

The density data presents a clear picture of the pressing need that existed to share dwellings and the resultant overcrowding. However, it is clear to the 21st-century observer that the causes of disease and death were chiefly economic and social in nature, and had far less to do with medical or town planning issues.

But in the mid 19th century, the role of population density in the high urban mortality rates was explained by three main, generally sound arguments:

– First, the whole tradition of the miasma theory based, as we have explained, on the quality of the air as an agent of contagion.

– Second, statistics not only showed the high urban mortality rates; they also indicated that the cities with lower population density recorded lower rates of mortality.

– Lastly, the association between density and mortality justified the need to extend the cities and plan new settlements. At the same time, pressure to develop farming land close to the old town centres obviously stemmed from the urgent need for more land for industrial factories and workers' housing. The demand for new land for the city was also a response to other factors.

And so, some technical solutions to the problem of hygiene, such as the sewage system, actually opened up a new professional field and led to the introduction of urban services networks, which were gradually incorporated into the new buildings. These new services considerably broadened the opportunities for economic exploitation from the urban development.

Furthermore, the expectations of urban growth fed a desire to try out new building typologies and new types of urban spaces – for both public and private use – that were difficult to develop in the city’s interior. The commercial boulevards and the new avenues that ran alongside the old walls were in fact making sharp inroads into the territory awaiting development, which sooner or later would be accompanied by the building of new housing.

Lastly, urban development outside the old walls went hand in hand with the introduction of new transport systems, such as trains or trams, or the construction of new infrastructures. These changes, owing to the gains in accessibility and the greater attraction of the now better-served and connected land, in turn, encouraged further rounds of development and construction.

In short, the process of urban production had changed in form, but most of all in scale, and the demands for new land to develop were a common denominator in the majority of cities. Hygienic justifications, for their part, made it possible to generate a consensus on urban growth and speed up the transition between the city that had been hemmed in by the walls and the new development of extensions or the suburban habitat of the “garden city”.

And so it comes as little surprise that even at the turn of the 20th century, the miasma theory and the lack of hygienic conditions were still cited in criticisms of density, as shown by this fragment of the *Anuari estadístic de la ciutat de Barcelona* (Statistical yearbook of the city of Barcelona) for 1902:

[...] In general, the hallway, which should have served to ventilate and bring light into the rooms, is the focus of these epidemic diseases. All the old junk is piled up there, hens and pigeons are bred in tiny cages and it serves as a recipient for all the rubbish of the neighbourhood. There, in those rooms, is where you will find the origin of most of the infectious diseases that later spread to the entire city, leaving swathes of victims in their wake.<sup>7</sup>

The report goes on to describe an ill-defined, confused city, which town planning and its scientific reasoning sought to rectify:

[...] the beautiful extension stretches as far as the areas of the abolished boundaries of these outskirts, with better hygienic conditions than the old part. The streets are wide and all lined with trees, forming a kind of immense chessboard, with some streets running from the sea to the mountains and others perpendicular from the Besós to the Llobregat, with two great transverse thoroughfares that geometrically follow the directions of the meridian and the parallel.<sup>8</sup>

### The crisis of the hygienist narrative: the end of the density-mortality link

The extensions, however, did not succeed in maintaining better conditions of urban density for long. New dense districts, where the labour force that worked in the factories outside the old city was concentrated, appeared along the edges from the first decades of the 20th century. Urban mortality, meanwhile, once again soared as new epidemics, though lacking the virulence or persistence of the cholera of the 19th century, spread among the urban populations.

Modern sociology – by giving importance to inequality in living conditions as an explanation for differences in mortality – and advances in bacteriological medicine – by identifying greater numbers of pathogenic agents and making vaccines widely available – tolled the death knell of the hygienist discourse that had so closely associated density with mortality.

However, by that time, town planning – fuelled by the process of industrialisation and the early dynamics of metropolisation, which were fully consolidated in the first decades of the 20th century – no longer had need of the hygienist justification. In fact, it was sufficiently legitimised by the imperatives of industrial growth and a new period of self-sustaining urban development.

#### NOTES

1. Edgar ALLAN POE, “The Man of the Crowd”, in *Tales of Mystery and Imagination*, London, Chancellor Press, 1985, p. 347.

2. For an exhaustive and detailed version of the hygienist paradigm and its implications for the link between density and mortality, see Francesc MUÑOZ, “L’espai urbà i la salut: una visió històrica”, in Joan NOGUÉ; Laura PUIGBERT; Gemma BRETCHA (ed.), *Paisatge i salut*, Olot, Observatori del Paisatge de Catalunya, 2008.

3. Alain CORBIN, *El perfume o el miasma. El olfato y el imaginario social: siglos XVIII y XIX*, Mexico, Fondo de Cultura Económica, 1987 (1st ed., Paris, Aubier Montaigne, 1982).

4. MAE (Report on the Preliminary Extension Project), paragraphs 48 and 54, in *Cerdà y Barcelona*, Madrid, Ministerio de Administraciones Públicas and Ajuntament de Barcelona, 1991, p. 54; and TCC (Teoría de la Construcción de Ciudades), paragraph 192, in *Cerdà y Barcelona...*, p. 169.

5. TCC, paragraph 194, p. 169.

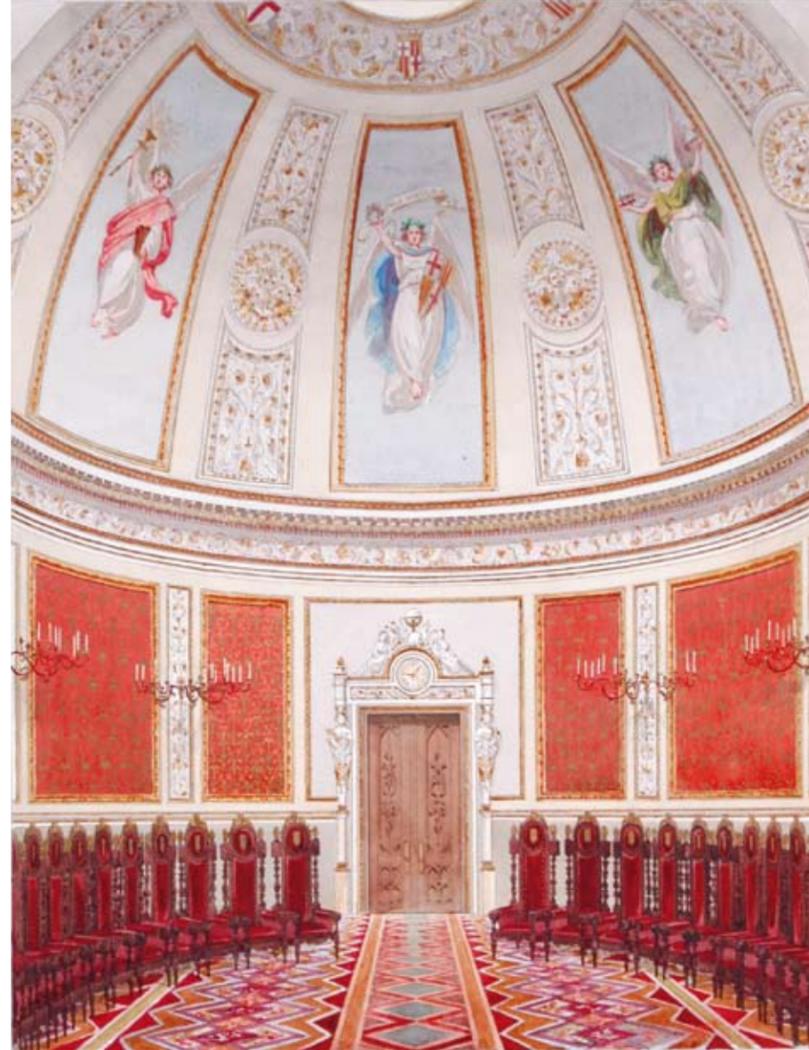
6. Anna CABRÉ; Francesc MUÑOZ, “Ildefons Cerdà i la insuportable densitat urbana: anàlisi i cartografia de la Teoría general de la urbanización”, in *Cerdà, urbs i territori*, Madrid, Electa, 1994, pp. 37-46.

7. Anon., “Hacinamiento urbano”, in *Anuario estadístico de la ciudad de Barcelona*, Barcelona, Ajuntament de Barcelona, 1902, pp. 90-93.

8. Anon., “Hacinamiento urbano...”, pp. 90-93.



J. Serra. View of part of the new council, 1860. RB



## The municipalist path to the metropolis. Biographical note on Mayor Josep Santa-Maria (1812-1867)

Glòria Santa-Maria Batlló

In 19th-century Barcelona, a city struggling to modernise and improve its living conditions, the career of the progressive liberal mayor Josep Santa-Maria was decisive. He was the standard-bearer of a widely-held concern of the time: the defence of municipal competences in the face of the centralising tendency of the state.

The municipalist aspiration, for the city to be extended with no limits other than its physical geography, called for a truly visionary project. First, the city had to renounce its status as a fortress, which would mean overcoming the political and military obstacles to demolishing the walls. And that had to be done in an unfavourable political context, in which the only effective centralising mechanism available to the monarchic government was the army, with the captains-general serving as *de facto* governors of the “provinces”.<sup>1</sup> The province of Catalonia was itself in an effective state of siege from 1842 to 1858.<sup>2</sup>

We shall now give a brief account of the character and background of the man who would become the longest-serving mayor in the troubled 19th-century Barcelona City Council.

### Political beginnings in Lleida and Barcelona, arrest and deportation to Mallorca

Josep Santa-Maria i Gelbert (Toulouse, 1812 – Barcelona, 1867) was the son of Domènec Santa-Maria i Serra (Berga, 1781 – Barcelona, 1857) and Isabel Gelbert i Oliva (Puigcerdà, 1789 – Lleida, 1835), who had lived in Puigcerdà but were exiled to Toulouse in 1811 during the Peninsular War.

In 1814, at the end of the war, the family settled in Barcelona, where the father worked in trade and Josep began his schooling, which he later continued at the Collège Royal de Pamiers (Ariège). Once he had finished his education, the young Santa-Maria returned to Barcelona to help his father at work as well as study philosophy “in a private class” from 1829 to 1832.<sup>3</sup>

The family owned property in Torregrossa and, in the early thirties, Josep Santa-Maria lived for long periods in Lleida, where his mother would later die in 1835. That same year he joined the Segre City Militia. Early in 1836, he became a member of the Lleida Weapons and Defence Committee,

whose purpose was to obtain resources to fight the war against the Carlists.<sup>4</sup> The committee had been formed according to the instructions of the government presided over by Mendizábal.

Santa-Maria continued to spend much of his time in Barcelona, where he was administrator and editor of the newspaper *El Constitucional*. He was elected a member of the Constituent Parliament on 2 October 1836, replacing the philologist and essayist Antoni Puigblanch. He did not take immediate possession, however, because he was not yet of age, fixed then at 25. In that same year, 1836, his father was elected substitute member of Lleida Provincial Council.<sup>5</sup>

A few months later, in 1837, Josep was arrested with other progressives and deported to Mallorca, having been accused of taking part in the 4 May uprising in Barcelona.<sup>6</sup>

The member for Barcelona, Domènec Maria Vila, denounced the arrests as arbitrary and unconstitutional to the Parliament on 30 May and 3 June 1837.<sup>7</sup> Vila revealed that on the night of 23 to 24 May “a considerable number of citizens, whose opinion is in no way suspect – among them a substitute for that province in this Parliament [Josep Santa-Maria], others who have been members of the Weapons and Defence Committee, another constitutional mayor, others electors of the Constitutional City Council, and others of whom I have no exact knowledge – were hastily embarked and transported to who knows where; and a severity has been used in their treatment that would perhaps not be used with those belonging to the opposing party, and which recalls the bitter days of the Count of Spain”. The deportees had not even been allowed to take their belongings or alert their families to their predicament.

The Barcelona uprising had been provoked, Vila continued, by the army itself, and more specifically by the captains general (Parreño and De Meer on the dates of the events).<sup>8</sup> He was quite clear: Parreño was guilty of having usurped the power of the Parliament when he had accepted the resignation of the legitimate Barcelona City Council, which had emerged from the elections of 17 October 1836, and then appointed the previous council as the municipal government. De Meer was guilty, Vila said, of refusing to obey the orders of Parliament to raise the state of siege in Catalonia and call municipal elections.

Vila’s analysis and account of the events are supported by the testimony of the progressive lawyer Rafael Degollada, who was among the group to be arrested and deported. The group was forced to embark on the night of 23 May, at three o’clock in the morning, on the schooner *La Mahonesa*, and they did not find out that they were being taken to Mallorca until hours later. When they reached the island, they were confined in Bellver Castle, where

they were held for a month. Later the government signed the release order in the complete absence of any judicial process.<sup>9</sup>

That event was decisive in the political training of the young Santa-Maria. In November 1837, only a few months after leaving prison, he began to study law, a seven-year degree at the time. Three years later, on 11 October 1840, he was appointed lieutenant of the Barcelona National Militia, and in 1843 was promoted to commander.

In the same year, 1843, he ran as a member of parliament and was elected to represent Tarragona, as a candidate for the Progress Party led by Joan Prim. But, once again, he was unable to take possession. The elections in the Tarragona district had been annulled and the eventual validation would coincide with the dissolving of Parliament by the regent Espartero.

### The demolition of the walls

1843 was a difficult year for Barcelona as local people launched an uprising against the regent Espartero, who had bombarded the city just the year before. It was also the year of Josep Santa-Maria's debut on the council, as one of the city's constitutional mayors.<sup>10</sup> On 26 May, Espartero dissolved Parliament and forced the resignation of the legitimate government led by the progressive Joaquín María López. Progressives and moderates, alike, from all over the country formed an alliance against him. As constitutional mayor, Santa-Maria celebrated the passing of the decree for the demolition of the walls, signed by the Supreme Council of the Province of Barcelona on 27 June 1843, just days after the city's uprising against the regent. "[The walls] are an insuperable barrier to the progress and growth of this industrious population, a stone girdle that squeezes it, crushes it and kills it," read the decree.<sup>11</sup> Santa-Maria, himself, volunteered to chair the demolition board.

His first action as the board's chairman was to submit a request for the free and perpetual ownership by the city of the land on which the walls stood, which was accepted on 1 July by decree of the Supreme Council of the Province. The city thus recovered its historic rights to the land, which had been in the hands of the army since 1714. The Council of the Province maintained that the natural defence of the city was provided by the sea and the mountains, and demanded that Barcelona cease to be a fortress and that La Ciutadella be demolished, entreaties that had echoed throughout the city's history.<sup>12</sup>

And so during a two-month period in the summer of 1843, despite the continuation of the war, sections of the wall were toppled. The curtain wall on the right-hand side of Portal de Sant Antoni came down, as did the walls next to Portal de l'Àngel and those between the Jonqueres and Sant Pere bastions and on the right-hand side of Portal Nou.<sup>13</sup>

But the government of Joaquín M. López, which had come back to power in Madrid on 23 July, caved in to military pressure and quickly decreed a halt to the demolition. It also broke its promise to convene the Central Council (the meeting of the representatives of the provincial councils) or the Constituent Assembly. It did, however, convene the ordinary Parliament for 15 October. These developments, needless to say, provoked a public outcry in Barcelona and the mobilization of the National Militia against the government and in support of the Central Council.<sup>14</sup>

On 15 August the government, in the search for a consensus figure, appointed Josep Santa-Maria as political head (civil governor) of the province of Barcelona, a decision that was roundly applauded by the three city newspapers, *El Constitucional*, *Diario de Barcelona* and *El Imparcial*. Just a few days before, *El Imparcial* had speculated about the possible appointment of Santa-Maria to replace Luis de Collantes:

[...] that misfortune [Collantes' departure] would be mitigated if it were true, as the rumours suggest, that he would be replaced by our worthy constitutional Mayor José Santa-María, whose civic value, common sense, prudence and knowledge we have witnessed during the recent difficult events in this capital; in particular when, with the noblest bravery, he laid his mayoral mace on the floor and told the commander of the cavalry squadron that formed at the foot of the column to declare martial law that it was he who answered for public peace and quiet in the city, and that the law would not be decreed unless they first stepped over his mace and then trampled his corpse.<sup>15</sup>

But Santa-Maria did not accept the post of civil governor. On the day of the appointment, there was a large demonstration in Barcelona in favour of the Central Council, to which he lent his support. The municipal representatives were faced with a difficult decision: on the one hand, they wanted to spare the city – which had been heavily bombarded just one year earlier – any further suffering, while, on the other, they were wary about going against the will of the majority of the people.<sup>16</sup>

The negotiations with the López government were fruitless and on 3 September there was an exchange of fire between the forces of the interior of the city (National Militia and volunteers) and the army stationed at La Ciutadella, Don Carles Fort and Montjuïc.<sup>17</sup> The council was reduced to nine councillors and Mayors Soler i Matas and Santa-Maria – the only members who had decided to stay on in the city since August.<sup>18</sup>

By 4 October, the bombardment had taken an even greater toll than that of the previous year. From 14 to 20 November, Santa-Maria stayed on as the only mayor of Barcelona; Soler i Matas and Councillor Josep Oriol

Ronquillo had left the city for the second time to sign the surrender and did not return until the government troops entered. On 20 November the captain general dismissed the council and arbitrarily appointed a new one made up of moderates. The legitimate municipal representatives went into exile. The concession to the city of the ownership of the land on which the walls had stood was annulled and the fortifications rebuilt.

The moderates also imposed themselves in the state government, Ramón de Meer returned to the captaincy general of Catalonia and the four Catalan provinces were declared in a state of siege on 6 February 1844. That was the beginning of Spain's so-called *Década Moderada* (Moderate Decade), during which a conservative and strongly centralist state model was introduced across the country.

Santa-Maria did not reappear on the political scene until 1850, when he ran as a candidate for Parliament for the Lleida Progressive Liberals; a candidature that he would repeat in 1858 during his run as mayor of Barcelona.<sup>19</sup> In 1855, with the progressives installed in government, he was appointed justice of peace in Barcelona; a position he held until July 1858, when he took possession of the mayor's office.

The complete demolition of the walls during the Progressive Biennium (1854-1856), together with the approval of the guidelines for an unrestricted extension and the drafting by Ildefons Cerdà of the topographic plan of Barcelona, were major milestones in the city's development. But the tendering process for the project and work on the city's extension had been left on hold with the return of the moderates to government. Moreover, though the disappearance of the walls had been an indispensable step, it was not enough on its own. If Barcelona kept its fortress status, it would mean the addition of new fortifications or exterior forts without walls, i.e., an extension subordinated to strategic convenience. It was against this background that Mayor Santa-Maria began his struggle for the development of a collective urban vision.

### Making the extension a reality: Barcelona mayoralty 1858-1863

A return to the frustrated extension programme of the Progressive Biennium was possible with the arrival to power on 30 June 1858 of the Liberal Union government presided over by Leopoldo O'Donnell. One of the new administration's first acts was to appoint Josep Santa-Maria mayor of Barcelona in late July.

One of the first actions of Santa-Maria's council was to raise the demand that Barcelona cease being a fortress. This meant rejecting the limited extension project drafted by the military engineers and the architect Francesc Daniel Molina, which had been approved by the government on 26 July. Nor

did the council endorse the preliminary extension project by the municipal architect Miquel Garriga i Roca, approved on 6 April by the same councillors under the previous mayor.

The O'Donnell government acceded to these petitions with the Royal Order of 9 December 1858. By doing so, it abolished the fortress status of Barcelona and granted the unrestricted extension.

That favourable juncture – a rare occurrence considering the ephemeral nature of 19th-century state governments in Spain – was seized upon by the council presided over by Santa-Maria, which had enjoyed a progressive majority since the restoration of the council in January 1859. It immediately took up and updated the 1854-1856 programme, calling for: a) municipal ownership of the land freed up by the demolition of the walls; b) an amendment of the expropriation law; c) a revision of the bases for the production of the extension plan; d) public participation in the process through the consultative committee; and e) the opening of public tender bids for the projects.<sup>20</sup>

The Catalan lobby in Madrid was spurred into action with the appointment of Pascual Madoz, Laureà Figuerola and Jaume Badia as members of parliament for Barcelona, commissioned in the capital to second the council's demands for the extension.

Moreover, the new programme included two major unprecedented novelties: the amendment of the Expropriation Law which had been in force since 1836 and the introduction of the renovation and improvements to the old city in the extension guidelines.

The municipal government – and in particular the mayor, as shown by his correspondence –<sup>21</sup> considered that the expropriation law was highly favourable to the private owners, to the detriment of public interest. The excessive compensation it offered the owners made the renovation of the old city impossible and hampered the building of the extension. The main thrust of the council's proposal, addressed to the government in May, was that the costs of the extension and renovation be borne by the owners of the exterior of the walls, since they would be the major beneficiaries when construction began on the rural land. The council also drafted some economic guidelines with the aim of dispensing with the idea of expropriation and the consequent compensation of the land for public thoroughfares, replacing it with free cession to the city by the owners seeking to build in the new city. Moreover, a 30% tax on the value of the building land in the extension was provided for. Half of the funds raised were earmarked for the renovation of the old city, another key feature of the 1859 municipal programme.

Considering that almost the entire population of Barcelona at that time was living in the old city, the mayor was determined to see that the extension included its renovation and improvements to its sanitary conditions:

Mean and devoid of high aspirations would the extension be if its impact did not include an improvement to what already exists, if old Barcelona should not see the disappearance of all its unhygienic conditions, the lack of comfort and adornment, those conditions that make it so ugly in the eyes of the people of this country and foreigners alike. Then the extension would be a monstrosity, a shapeless whole that would highlight them [the poor conditions] even more, and for that reason the Council demanded – and that is truly its greatest glory – that the extension should have two aims: one, improvement of what exists; the other, the true extension...<sup>22</sup>

Both the amendment of the expropriation law and the renovation of the old city encountered fierce opposition from the owners of the interior. The municipal government had indeed rejected a project by the owners for an extension between Barcelona and Gràcia on 3 February. As well as blocking that initiative, the council forbade building on land affected by the future renovation or the extension, unless the owners, themselves, undertook to demolish buildings that were not in accordance with the new alignment of the city. What is more, they urged the civil governor to order the mayors of the surrounding towns to do the same. Already implicit in that municipal request was the prospect of the metropolis offered by the unrestricted extension.

### The Cerdà Plan is approved during a power struggle between the Ministries of Public Works and the Interior

On his own account and completely bypassing the municipal process, Ildefons Cerdà embarked on what he thought was the most direct path to gaining approval for his project: to go straight to the Ministry of Works – where he had worked as a civil servant until 1849. Permission to conduct the preliminary studies for the expansion and renovation – during a period of twelve months and with no guarantee of the definitive concession of the project – was granted by the Royal Order of 2 February. The council found out on 11 February, a month after it had launched – with the approval of the civil governor – its own process that would culminate in the municipal tender.

Despite not having finished the economic guidelines, Cerdà brought forward the submission of his project to the Ministry of Works on 18 April, the day following the official announcement of the municipal tender in the *Diario de Barcelona*. As is well known, the government approved Cerdà's plan, and commissioned the drafting of the building and city ordinances in its Royal Order of 7 June – right in the middle of the council's open-tender process, which was set to close on 31 August.

It was a critical situation which Mayor Santa-Maria sought to resolve in as civilised a manner as possible. The council submitted a petition against the approval of Cerdà's plan, arguing that it amounted to an infringement of the

municipal deliberations on the extension plan and its drafting of the building and city ordinances:

[...] the Barcelona extension is of primary interest to no one but the city itself, which has its own *raison d'être*, its own life, just as an individual does; it must therefore be aware of its existence, it has a duty to know and appreciate the conditions of its evolution; of its moral and material development, because depending on what those are, its future is guaranteed or destroyed; the immense seeds of its prosperity and its present and future success flourish or fall to the ground [...] and most important of all is the singular fact, perhaps unprecedented in the history of a people, that, once having adopted a plan for the extension, the Council be deprived of the right to deliberate about it, to form and give its opinion about its more or less favourable conditions. [...] the Council does not comprehend why engineer Cerdà shuns the tender, an honourable struggle for true knowledge, for the artist with a heart, in order to hasten to seek the approval of his works outside that natural path, the most proper one, to collect well-deserved laurels [...].

[...] things have been taken to the barely credible extreme of empowering an individual to draft a project for building and city ordinances, taking no notice of the attributions conferred on the Municipalities according to paragraph 1 of article 81 of the law governing those bodies. [...]

How is it admissible, Ma'am, that being material improvements and a matter that affects Barcelona, the Council does not know what has been resolved, or how it has been resolved? [...] At all events, Ma'am, the Royal Order mentioned seriously breaches and undermines the very foundations of this Corporation.<sup>23</sup>

A committee of councillors immediately travelled to Madrid to argue the council's case to the government and insist that Cerdà take part in the municipal tender. But it met no success, largely because the decision had already been taken: a Royal Order of 31 July had made it possible to hold the competition but reserved for the government the right to choose between Cerdà's plan and the winner of the open tender.

In fact, and this is the crucial point of the affair, the interviews with the ministers revealed a sharp confrontation between the minister of the Interior, José Posada Herrera, who lent his full support to the Barcelona council's demands, and the minister of Works, the Marqués de Corvera, who had approved Cerdà's plan. On 24 March Posada Herrera had seen his defence of the Barcelona extension rejected and had promptly accused the Ministry of Public Works of interfering in matters that were the jurisdiction of the Ministry of the Interior. This, at the same time that Interior was the very ministry charged with developing one of the main policy aims of the Liberal Union government: administrative decentralisation.

The Ministry of Public Works, meanwhile, saw Cerdà's project as a potential extension model for the whole country, as part of a series of projects of wide territorial scope to be carried out by its team of engineers. And, in fact, there was evidence of an underhand relationship from the very beginning of the process between the Ministry of Public Works and Cerdà, to the detriment of the Ministry of the Interior and the Barcelona municipal authorities.

Mayor Santa-Maria refused to carry out the Royal Order of 17 September, which ordered the council to assess Cerdà's project aside from the tender. To justify his action, Santa-Maria cited the prior condition stipulated by the council that Cerdà should enter the competition, which would be judged by an independent technical jury. The municipal competition was held and the winner was the project by the architect Antoni Rovira i Trias.

The government's later decision to reject Rovira i Trias' project and ratify Cerdà's, on 31 May 1860, was eventually accepted by the council. Santa-Maria's aim was to make the start of work on the extension as smooth as possible. He once again claimed municipal jurisdiction over the extension and renovation programme when the civil government assumed overall authority – with Cerdà as technical adviser – in July 1860. The mayor's claims were eventually recognised by the Royal Order of 13 September 1862. As a result, Cerdà became a councillor and joined the Extension Committee in January 1863.

### Persistence with the municipal programme: boulevard, “Plaça de Catalunya”, renovation of the old city, demolition of La Ciutadella

On 13 December 1862, Santa-Maria's council submitted new economic guidelines for the extension adapted to Cerdà's approved plan. Amongst other things, the tax on land under construction was reduced from the 30% proposed in 1859 to 15%.

Other council initiatives proposed amendments to Cerdà's plan to fulfil some of the fundamental goals of the 1855 and 1859 municipal programmes. These included the construction on the land where the walls had stood of a 60-metre-wide boulevard which would link Montjuïc and La Ciutadella – replacing the 30-metre ringroad proposed by Cerdà –; the opening of a large central square north of the Rambla in the location where Plaça de Catalunya now stands; and the preservation of Passeig de Sant Joan.

After a whole series of vicissitudes which included approval by the government, the boulevard project was abandoned due to the government's continuing sale of the land on which the walls had stood. The sale, fiercely opposed by the municipal authorities, made it impossible for the council to

compensate the owners of the land. What is more, Plaça de Catalunya would not be completed until well into the 20th century.

On 26 November 1862 the council – unconvinced by Cerdà's plan to open three thoroughfares linked to the extension – passed its own renovation plan for the Old City, drafted by Garriga i Roca. As it turned out, neither plan was workable because the state government refused to approve the economic plans for either or amend the expropriation law.

The drafting of a project for the demolition of La Ciutadella, another of Barcelona's historic demands – and one which *was* provided for in Cerdà's plan –, was approved by the council on 15 January 1861 at the behest of Mayor Santa-Maria. The project was then sent to the government for final approval on 26 November 1862.<sup>24</sup> The government's reception was favourable, but shortly after the project had been examined in Madrid, the O'Donnell cabinet fell, on 2 March 1863. As a result, the fortress would remain standing until 1868.

Josep Santa-Maria did not live to see the end of La Ciutadella. He had resigned as mayor in April 1863, with the dissolution of the Liberal Union government and the formation of a moderate cabinet presided over by the Marqués de Miraflores. Between 1865 and 1866, with the Liberal Union government back in power, Santa-Maria served as Member of Parliament for Lleida. On 29 December 1867, he died in Barcelona, the city upon which he had left such an indelible mark as mayor; a politician who had always renounced his salary in the different posts he occupied. Shortly after his death, the extension would begin to become reality.

### NOTES

1. Josep FONTANA, *La fi de l'Antic Règim i la industrialització (1787-1868)*, Barcelona, Edicions 62, 1998, p. 248.
2. Between 1842 and 20 September 1858 there were only two intervals in which Barcelona was not in a state of siege: part of 1843 and the first part of the Progressive Biennium.
3. Those studies, later recognised by the University of Barcelona after he passed the university examination, consisted of two years of Logic, Metaphysics, Mathematics, Physics and Ethics. *AHUB* (University of Barcelona Historical Archive), *Espediente para el grado de Bachiller a Claustro pleno de José Santa-Maria i Gelbert. Leyes, 1841*.
4. Josep M. OLLÉ ROMEU, *Les bullangues de Barcelona durant la primera guerra carlina (1835-1837)*, Tarragona, El Mèdol, 1993, vol. I, p. 255 and note 11 to p. 276. *El Vapor*, 5-II-1836, p. 3.
5. Josep M. PONS, *El sistema polític a Lleida durant els anys de consolidació del liberalisme censatari (1843-1868)*, doctoral thesis directed by Josep Termes, Barcelona, UPF, 2001, p. 90, note 117.
6. Mateu CRESPI, *Diario de memorias de lo ocurrido en la ciudad de Barcelona (1820-1849)*, AHCB (City of Barcelona Historical Archive), manuscript, 23-V-1837. OLLÉ ROMEU, *Les bullangues de...*, vol. II, p. 193. See also the detailed analysis of the events from January to May 1837 on pp. 133-300

and in Manuel SANTIRSO RODRÍGUEZ, *Revolución liberal y guerra civil en Cataluña (1833-1840)*, doctoral thesis directed by Josep Fontana, Barcelona, UAB, 1994, pp. 385-460.

7. *Diario de Sesiones de las Cortes Constituyentes (DSCC)*, 30-V-1837, no. 211, and 3-VI-1837, no. 215.

8. Vila is referring to the two captains general, Parreño and De Meer, without mentioning the names, perhaps to lower the tension a little. I have put the names in the text to make things clearer.

9. Rafael DEGOLLADA, *Memoria del abogado Don Rafael Degollada, en defensa de su honor ultrajado*, Marseille, Senés Printing House, 1839, pp. 16-20.

10. At that time the post of mayor was collegiate; the mayors were: Josep Maluquer, Antoni Benavent, Domingo Ferrando, Josep Soler i Matas, Josep Ventosa and Josep Santa-Maria i Gelbert. Santa-Maria occupied the post from 21 May to 20 November 1843.

11. *AMAB* (Barcelona Municipal Administrative Archive), minutes of the Plenary Meeting, 27-VI-1843, folio 208v, speech by Josep Santa-Maria.

12. *La Junta Central. Proyectos de decreto de la provincial de Barcelona en 1843*, Barcelona, D. Agustín Gaspar’s Printing House, 1854, p.11.

13. Andrés PÍ Y ARIMON, *Barcelona antigua y moderna*, Barcelona, Imprenta y Librería Politécnica de Tomás Gorchs, 1854, vol. II, p. 1027.

14. The term “centralists” and the expression “centralist revolution” used to describe that uprising came from the demand made by the rebels for a Central Council chosen from the different councils that had been formed in the provinces against the Espartero government. It therefore had a meaning which is the opposite of what it suggests today.

15. *El Imparcial*, 3-VIII-1843, p. 3. This episode had taken place on 5 June, when the captain general José Cortínez Espinosa opposed Barcelona’s uprising against Espartero and prepared to declare the city in a state of siege. One day after this article, *El Imparcial* published a letter from Santa-Maria saying that there had been other members of the corporation with him and that those who were not would have done the same thing in the circumstances; Santa-Maria was accompanied by Mayor Soler i Matas.

16. See Santa-Maria’s speech in *AMAB*, minutes of the Plenary Meeting, 15-VIII-1843, f. 289.

17. In late July, Josep Santa-Maria had been appointed first commander of the 6th battalion of the Barcelona National Militia.

18. Mayor Antoni Benavent had left his post to take on the chair of the Barcelona Provincial Council; the others had left.

19. PONS, *El sistema politic...*, pp. 148, 447. *Diario de Barcelona*, 27-VIII-1850, no. 237, p. 4492; 9-X-1858, no. 282, p. 9067.

20. See a detailed analysis of the whole process from July 1858 to May 1860 in Glòria SANTA-MARIA, *Decidir la ciutat futura. Barcelona 1859*, Barcelona, Ajuntament de Barcelona, Museu d’Història de Barcelona, 2009.

21. Letter to Pascual Madoz 15-VI-1859, letter to Joan Prim, 31-V-1860, *AMAB*, Q 137, *Obres públiques-eixample*, file 1375, piece 3 and piece 12.

22. *AMAB*, Q 137, *Obres públiques-eixample*, exp. 1375, piece 3, letter from Josep Santa-Maria i Gelbert to Ignasi Llasera i Esteve, 30-VI-1859, in reply to the Acadèmia de Belles Arts.

23. Petition to the Queen, 9-VII-1859, *AMAB*, Q 137, *Obres públiques-eixample*, file 1375, piece 3.

24. The proposal was included in the *Memòria sobre l’estat economicoadministratiu de l’Ajuntament del bienni 1859-1860*, presented by the mayor and approved by the council on 15 January 1861. The drafting of the project for the demolition of La Ciutadella was commissioned from the municipal architect Garriga i Roca.

## Cerdà, 1860-1866: city theoretician and extension manager

The Cerdà that we are arguably most familiar with is that of the theoretician of the city; he was concerned with stillness and movement, housing and streets, and all the other elements of modern city life. As an engineer he was an expert on roads but sanitarianism determined his conception of the house.

There is another Cerdà, though: that of the methodical manager of the extension process. The 1859 plan was a project that inevitably had to be completed on the ground and was constantly being redrawn. The process highlighted his inexhaustible capacity for inventing solutions to the problems of implementing the extension.

And there is a third Cerdà, at odds with other professionals: about the relation between city and monument and – most of all – about the indicative or prescriptive character of the locations of the services and facilities in the 1859 plan.

### The triumph of Cerdà

The period from May to October 1860 can fairly be described as the “Triumph of Cerdà.” During that time, a series of favourable events would take place, of which the most important were the decree that authorised the building of the extension according to the 1859 plan; the concession of the first building permits to the leader of the property owners of the outskirts; the visit of Isabel II to Barcelona to inaugurate the construction of the new city and the unanimous support of the institutions for the motives behind the state visit. After so many years and the many sacrifices Cerdà had made to achieve the extension, the sheer magnitude of the goal accomplished made up for many of his earlier confrontations.

“Artículo 1º: Todas las construcciones que se intenten en lo sucesivo en Barcelona y pueblos inmediatos de Sans, las Corts, Sarriá, San Gervasio, San Andrés del Palomar, San Martín de Provensals y San Adrián del Besos, dentro de la zona comprendida en el proyecto de reforma y ensanche de aquella capital, aprobado por Real orden de 7 de junio último, se verificarán con sujeción a dicho proyecto, quedando desde luego los particulares autorizados para edificar en sus respectivos terrenos con arreglo al mismo y a las prescripciones vigentes de policía urbana.” \*

\* “Article 1: All constructions which are proposed henceforth in Barcelona and the neighbouring towns of Sans, Las Corts, Sarriá, San Gervasio, San Andrés del Palomar, San Martín de Provensals and San Adrián del Besos, within the zone included in the renovation and extension project for the capital, approved by Royal Order of 7 June last, will be checked in accordance with that project. Of course, there will still be individuals authorised to build on their land if they comply with it and with the city police regulations in force.”

Royal Decree of 31 May 1860 authorising the construction at the extension according to the Cerdà Plan



Unknown author. Industrial and Artistic Exhibition Hall, 1860, AFB



Album dedicated to Queen Isabel II by Barcelona Council in memory of her journey to the city to inaugurate the extension, 1860, RB



Facade of the City Hall, 1860, RB



General view of the port, 1860, RB



View of the station in Pla de Palau, 1860, RB



Facade of La España Industrial, 1860, RB



Printed handkerchief presented to the Queen by La España Industrial, detail, MUHBA



Ildefons Cerdà. Plan of the alignments of the extension and renovation of Barcelona, undated [1861], AHCB

### The theory: the atmospheric cube

In the 19th century it was widely believed that the quality of the air determined the spread of epidemics, i.e. contagion through breathing. The atmospheric cube is the amount of pure air available in an enclosed bedroom – the space where the occupant(s) of the property are supposed to regain their strength each night. In the old city, the atmospheric cube varied between a quarter and a half of what was actually needed. The watchword of the extension was to provide all housing with the ideal amount of breathable air and Cerdà aimed to set aside 50% of the living space for the bedrooms. The ideal house is a cube, open on all four sides and surrounded by greenery, but that was only within reach of a minority.

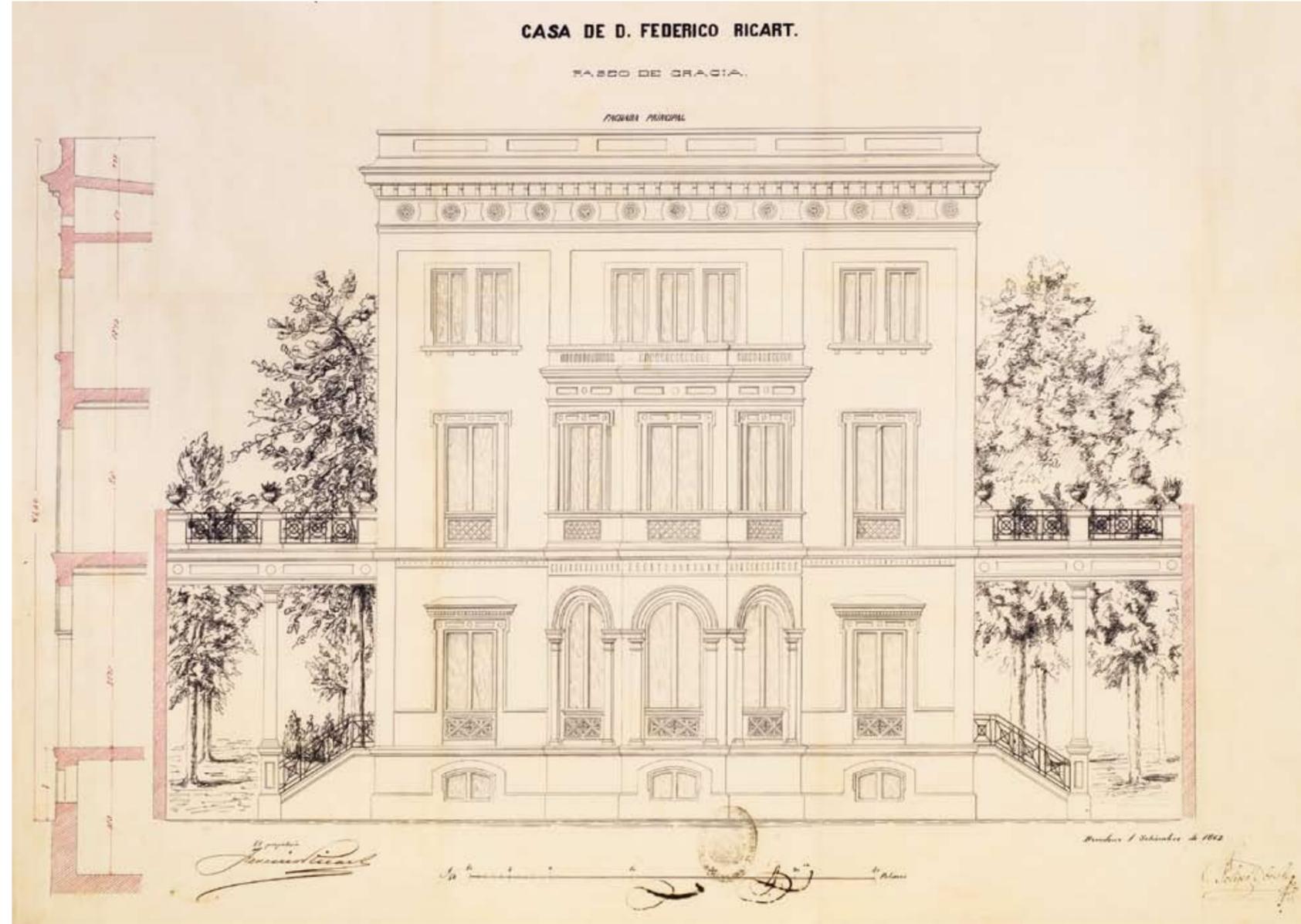
“No me he contentado con resolver casuísticamente las cuestiones, como vulgarmente se hace y es lo más cómodo, sino que allí donde me ha hecho falta una teoría a la cual subordinar el asunto de que se trataba, la he inventado, las más de las veces, por no decir siempre, con el más ímprobo trabajo.” \*

\* “I have not confined myself to resolving the issues casuistically, as is commonly done and is the easiest, but wherever I have been lacking a theory to which the matter in hand must be subordinated, I have invented one, most often, not to say always, with the most enormous labour.”

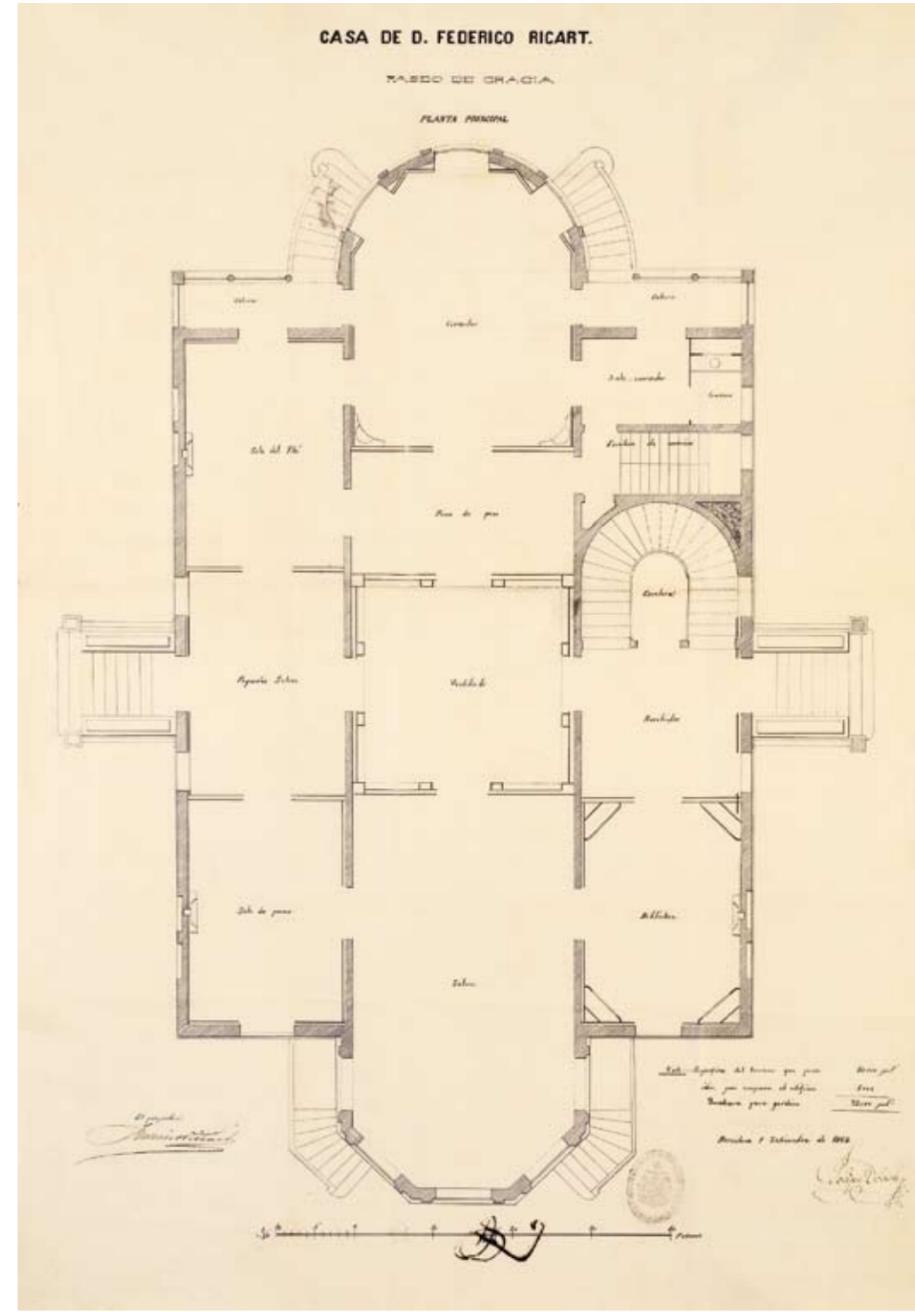
Ildefons Cerdà, “Divestment. Denouncing the way in which the Extensions Law has divested my economic Plan and consultation”, undated manuscript



*The Dodero Family*, daguerreotype by Manuel Moliné i Albareda, 1856, AFB



Felip Ubach. Architectural project for Federico Ricart's house in Passeig de Gràcia, 1861, AMAB



Main floor of Federico Ricart's house, 1861, AMAB

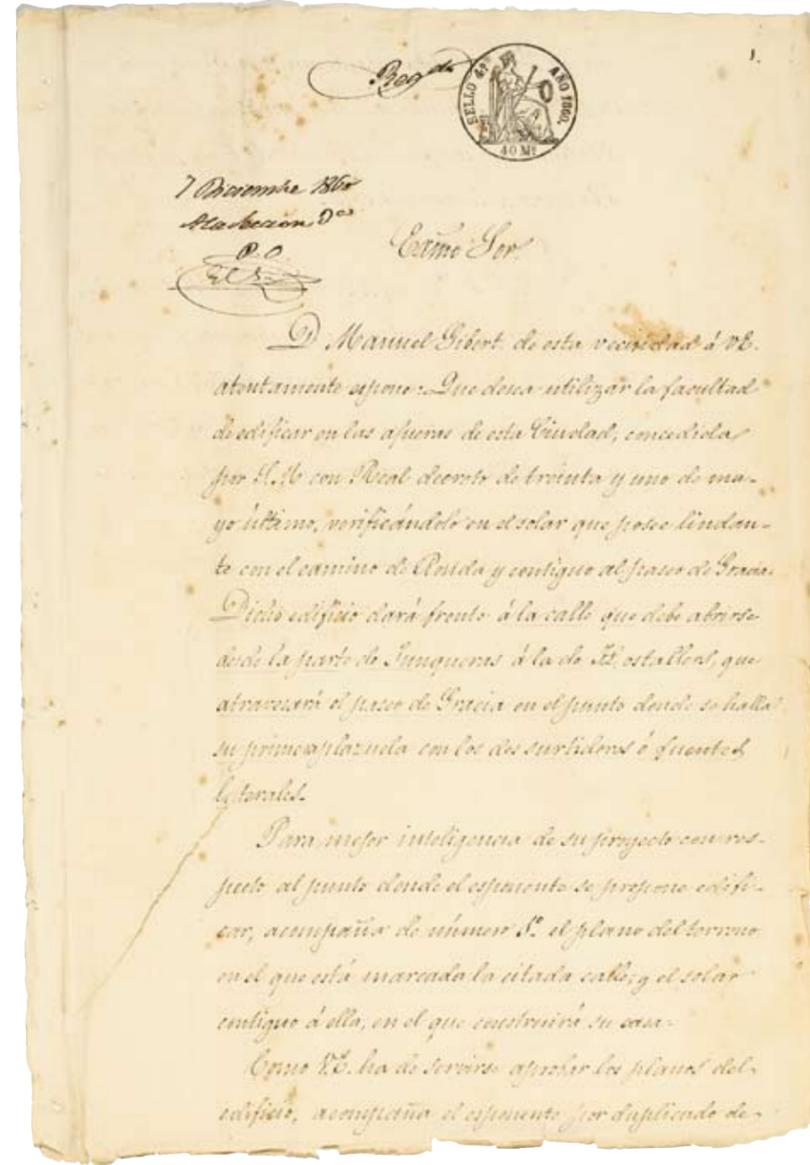
### The practice: the management of the extension

The government expressly delegated to the civil governor responsibility for authorising building work in the extension zone. Cerdà, as his technical advisor, had an important role in the developments while the city council was effectively sidelined from the process. The owners had to consult the provincial authority to obtain works permits, with the particular alignment of the property fixed by Cerdà. However, they had to cede the land for streets without compensation, meet the costs of the street infrastructures and respect certain restrictions on the development of the plot and the height of the building. Overseeing these processes was just one part of Cerdà's task as manager.

“Pasó el siglo de los proyectistas, esa época de candidez en que era admitida con apluso cualquier idea o teoría encaminada a un fin laudable, sin examinar si llevaba en sí misma elementos de realización. En nuestro siglo esencialmente práctico ... después de escuchar ... la exposición de un pensamiento ... nos apresuramos a pedir y examinar la posibilidad inmediata de su aplicación y ... los recursos con que para ello pueda contarse. Si no trae estos auxiliares indispensables, lo rechazamos ...” \*

Ildefons Cerdà, *Teoría de la viabilidad urbana y reforma de la de Madrid*, 1861, in *Cerdà y Madrid*, Madrid, Ministerio para las Administraciones Públicas y Ayuntamiento de Madrid, 1991, p. 185

\* “The century of the project makers has passed, that time of candour when any idea or theory designed for a praiseworthy purpose was admitted, without examining whether it bore elements of implementation within it. In our essentially practical century ... after listening to ... the exposition of a thought ... we hasten to require and examine the immediate possibility of its application and ... the resources it will have available. If it does not bring those indispensable extras, we reject it ...”

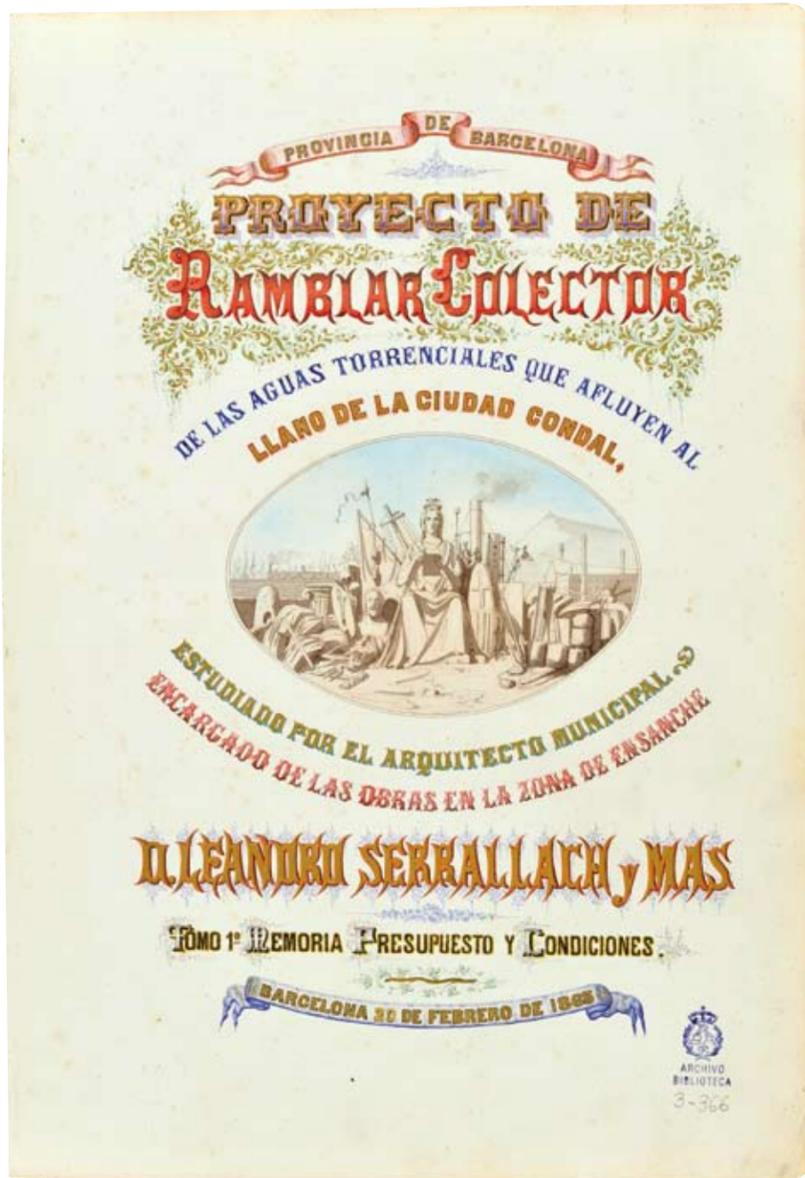


First page of the building permit for the first house in the extension granted to Manuel Gibert on the land of the future Plaça de Catalunya near La Ronda, 1860, AMAB

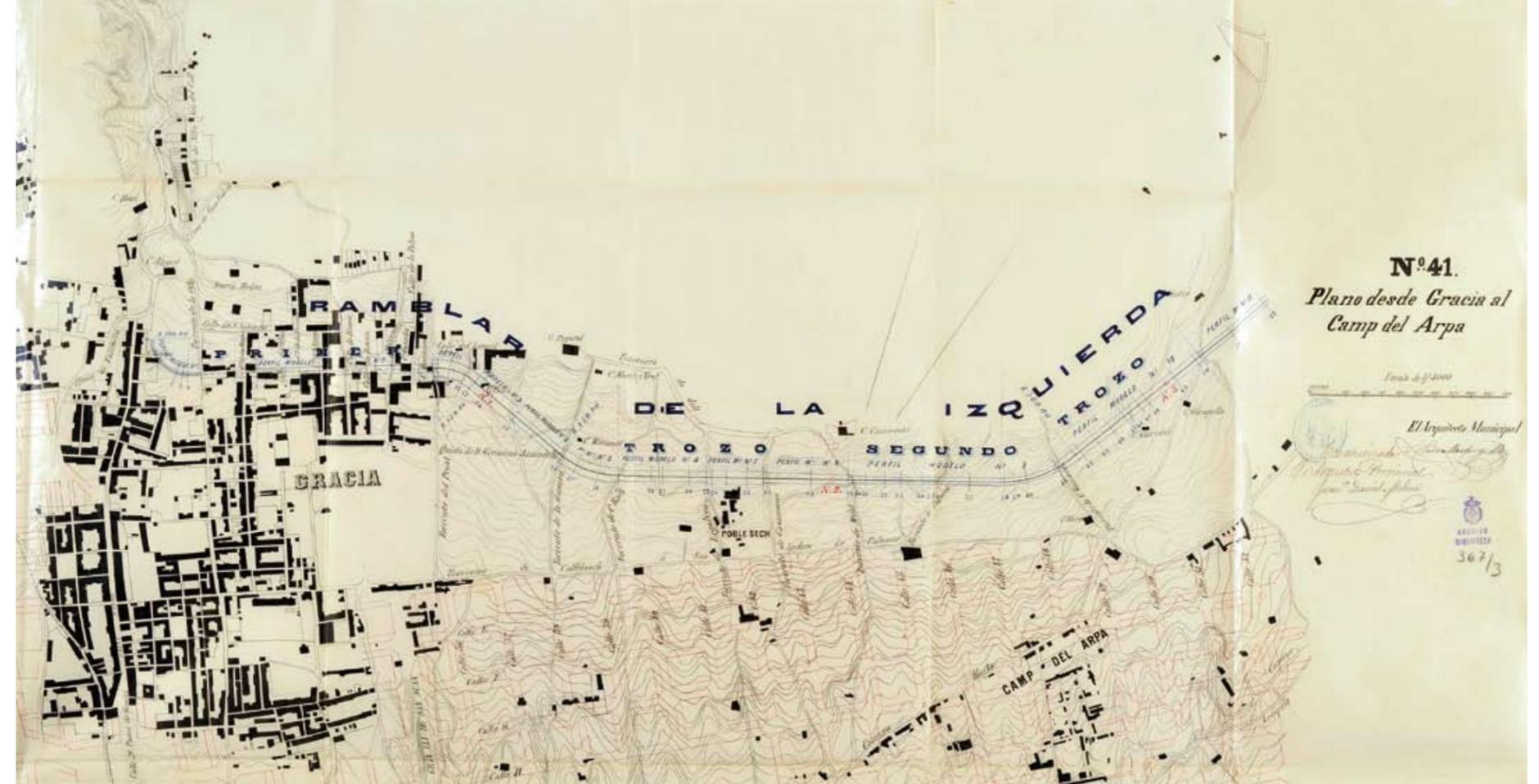


Josep Oriol Mestres. Facade of Manuel Gibert's house, 1860, AMAB





Leandre Serrallach. Project for the main drain for the rainwater flowing into the Barcelona plain, 1865, RABASF



Leandre Serrallach. Project for the main drain..., plan no. 41 from Gràcia to Camp de l'Arpa, 1865, RABASF



Ildefonso Cerdà. Detail of the Barcelona extension plan, 1859. RABASF



Ildefonso Cerdà. Detail of the Barcelona extension plan, 1863. AHCB

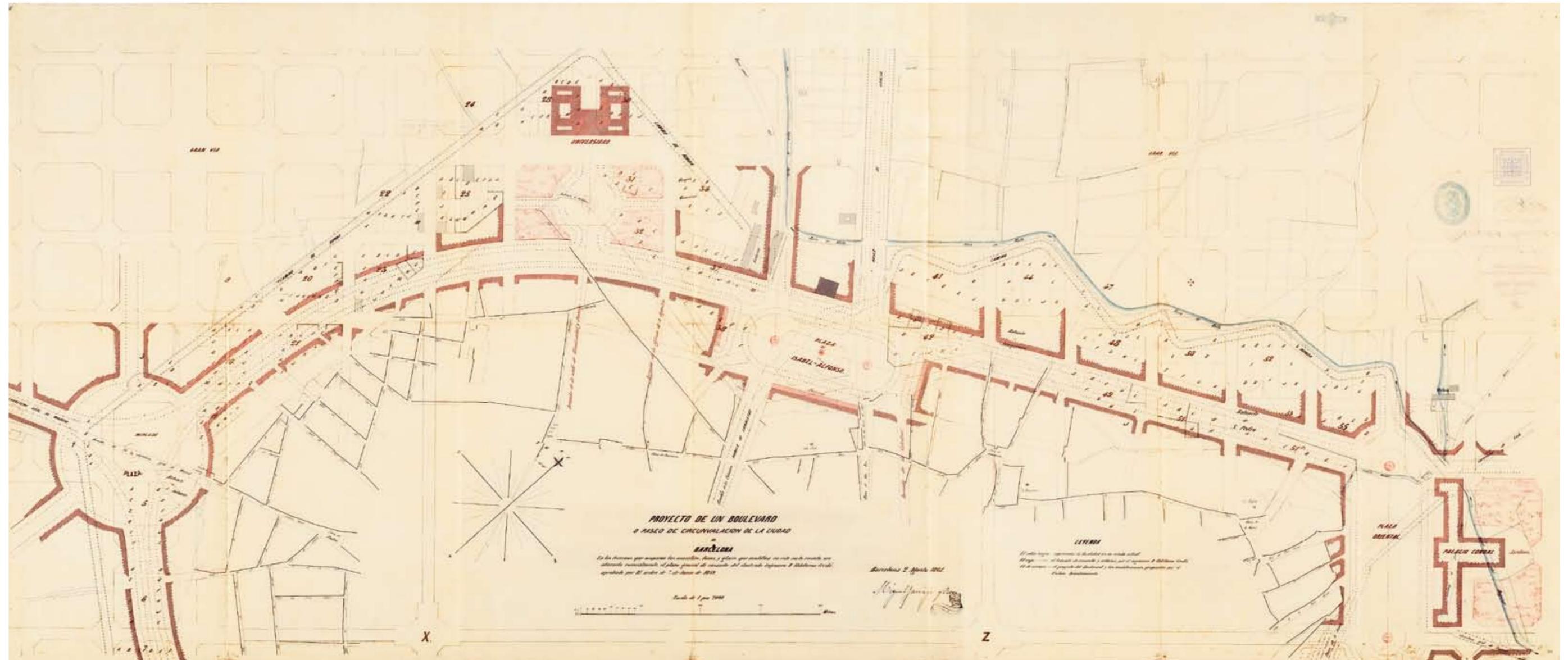
### Confrontations: Cerdà, Garriga, Molina

In 1862, the government rectified and recognised municipal competences in the extension. The change encouraged the Ministry of Interior to approve the project for a wide, tree-lined boulevard on the land where the old walls had stood, one of the three stated aims of the 1853 municipal programme. But Cerdà, on a commission from the Treasury, parcelled up the land which was then sold to private buyers. A year later the council acknowledged that it could not compensate the owners, withdrew the boulevard project and the state approval was null and void. That outcome led Cerdà to submit, in 1865, a preliminary design for the Plaça de Catalunya, which had not been included in the 1859 plan.

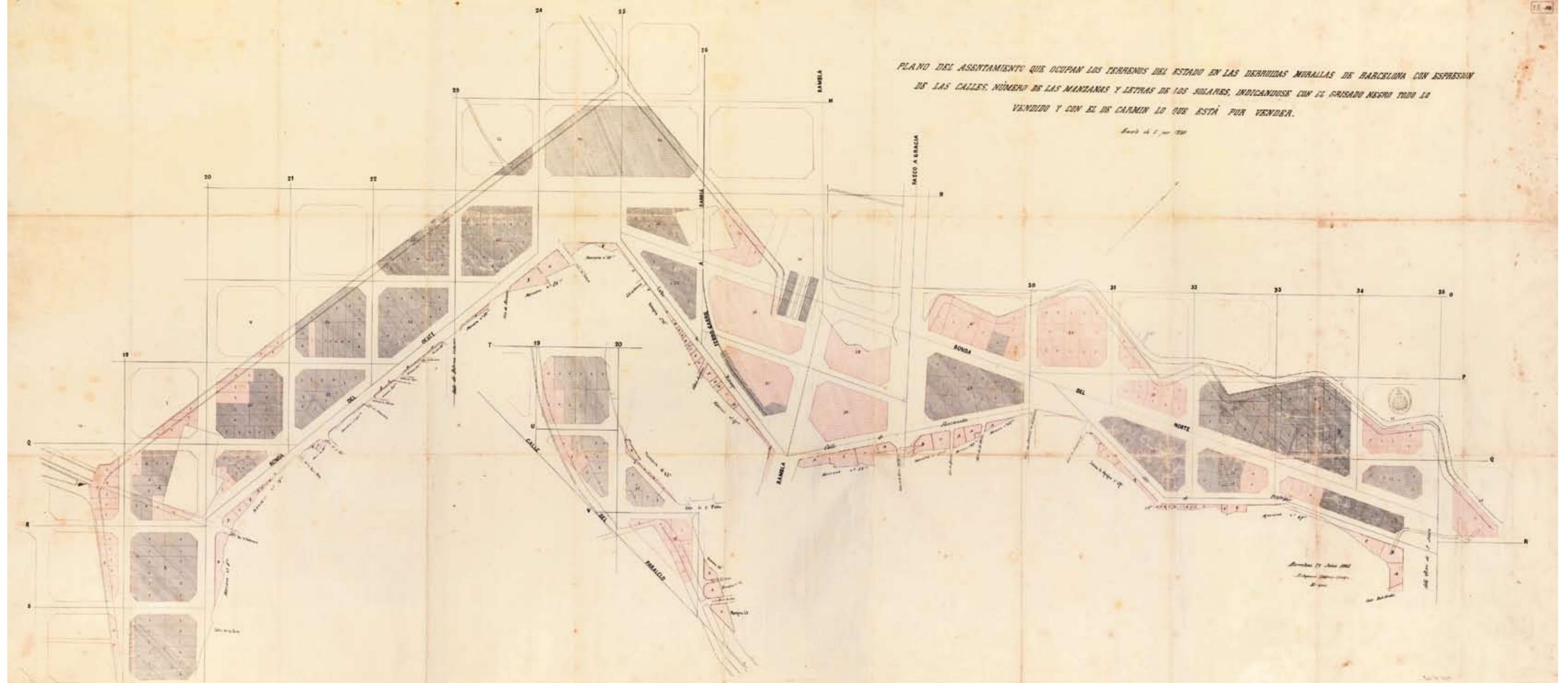
“ [...] entro en el examen de la pretensión de este Ayuntamiento (la propuesta de boulevard) [...] fundo el triunfo de la verdad [...] en los datos y números que he debido amontonar, ja que fijándose principalmente las esperanzas de buen éxito del Ayuntamiento en su pensamiento económico y mirando por ende con cierto desapego la parte científica, he creído buscarla y combatirla (la propuesta de boulevard) en su propio terreno [...] son tan íntimas las relaciones que entre la ciencia facultativa y la económica existen, que no cabe ser técnicamente bueno lo que es económicamente malo.” \*

\* “[...] I enter into an examination of the intention of this Council (the boulevard proposal) [...] I base the triumph of truth [...] on the data and numbers I have had to accumulate, since the Council's hopes for success are mainly focused on their economic thinking and therefore looking at the scientific part with a certain indifference, I think I have sought it and fought it (the boulevard proposal) on its own ground [...] the existing relations between professional science and economic science are so close that what is technically good cannot be economically bad.”

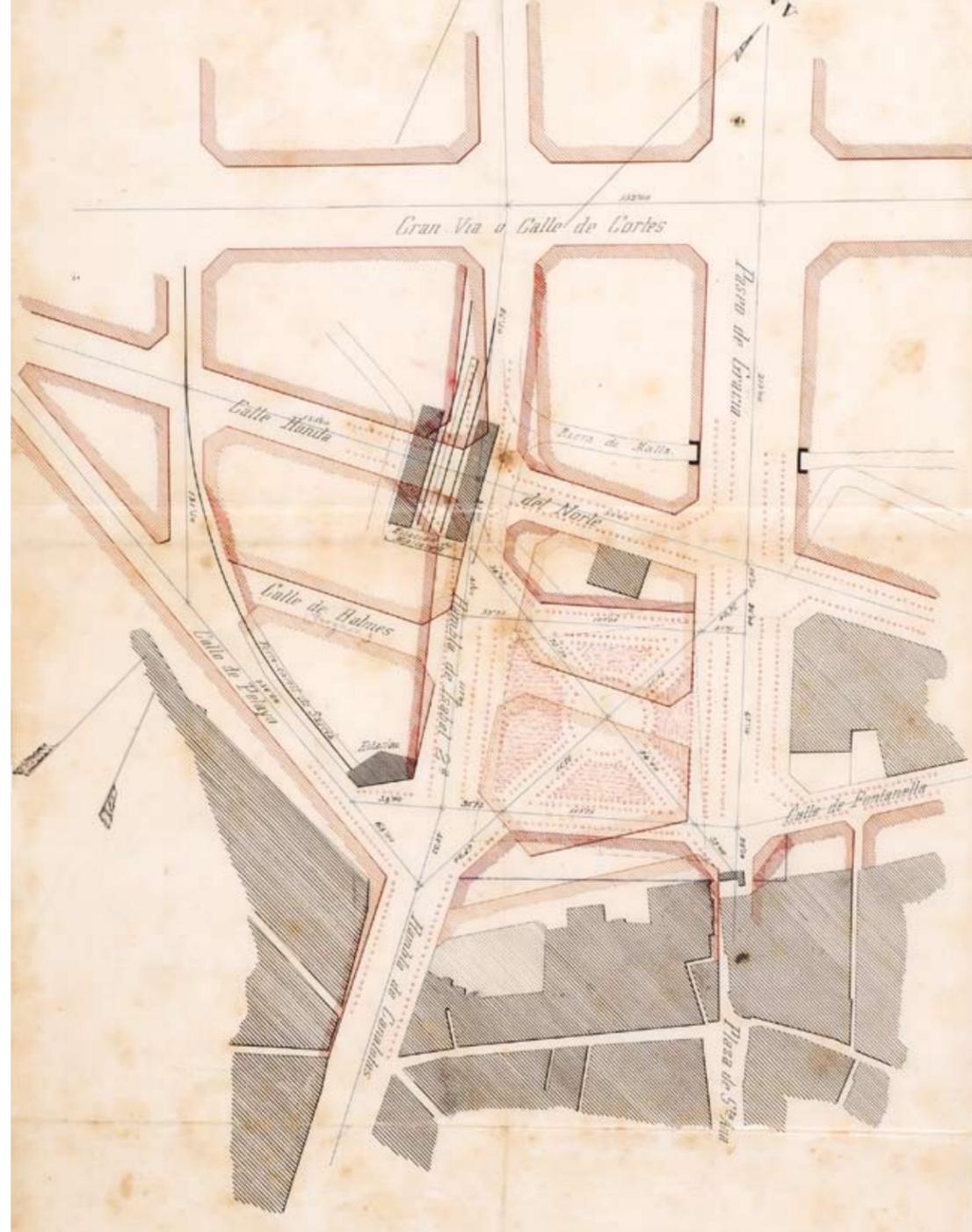
Ildefons Cerdà, Report to the civil governor on the boulevard project submitted by the Council, 24 December 1862



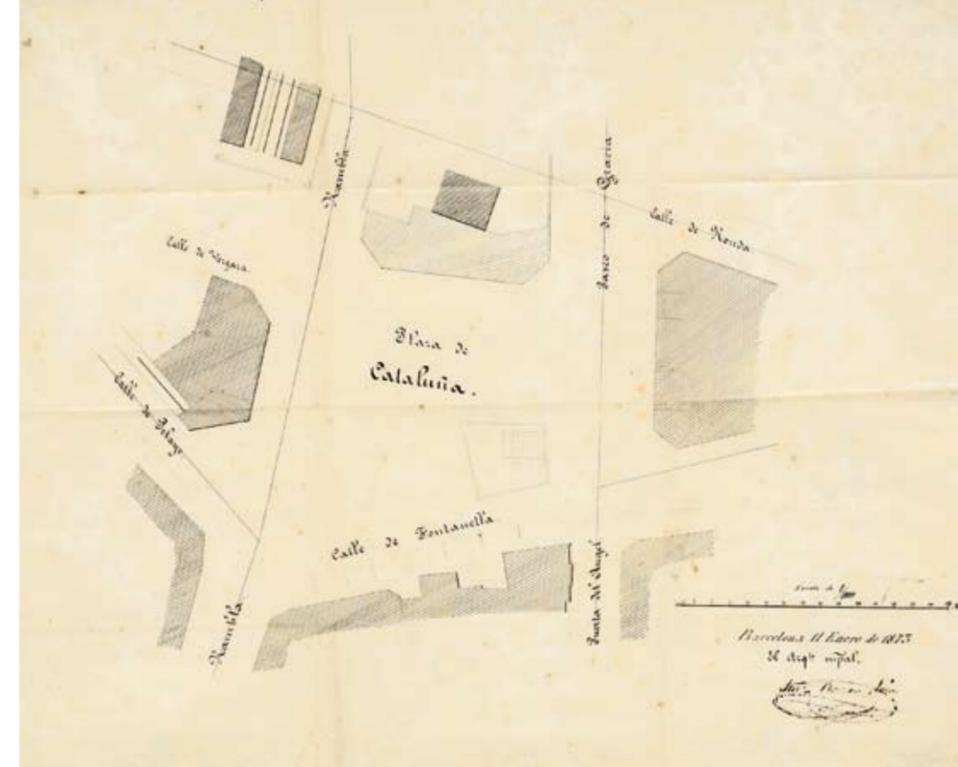
Miquel Garriga i Roca. Second project for the boulevard, upper part, 2 August 1861, AHCB



Ildelfons Cerdà. Plan of the settlement occupied by the state lands on which the demolished walls of Barcelona had stood, ... grey black areas indicate the plots that have been sold and red areas those that remain to be sold, 22 June 1865, AMAB



Francesc Daniel Molina. Amendment to the project for Plaça de Catalunya by Leandre Serrallach, 25 June 1866, AHCB



Antoni Rovira i Trias. Project for Plaça de Catalunya, 11 January 1873, version A, AMAB



Antoni Rovira i Trias. Project for Plaça de Catalunya, 11 January 1873, version B, AMAB

### Barcelona rules and state laws

In 1860 the government undertook to produce a general law for the extension and reshaping of Spanish cities, but abandoned their efforts in the middle of 1862.

In Barcelona, the governor laid down regulations to guarantee the free cession of land for the streets. However, a private appeal was upheld in Madrid and the government hastened to pass an extension law in 1864.

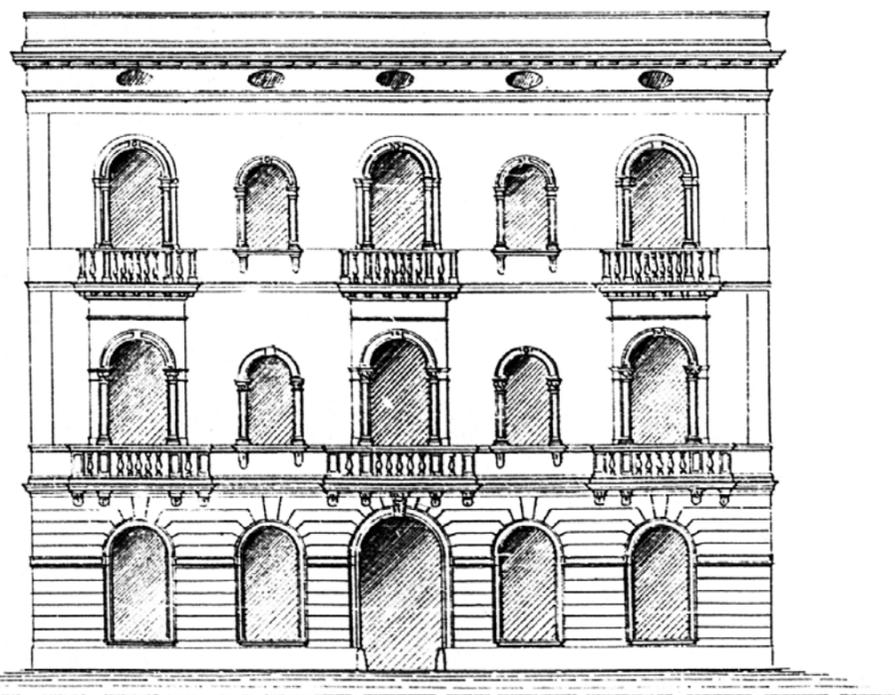
The new law made it obligatory to compensate in the event of the transfer of privately-owned land to the public domain and only provided tax breaks for voluntary cessions. But the debate on the financing of public works and the application of state provisions for the Barcelona extension would rage on until the 1890s.

“ ... si debiera expropiarse todo lo expropiable del proyecto de Ensanche, aun cuando desde el principio pudiera disponerse de todos los recursos señalados en el artículo 3º de la ley no alcanzarían con mucho para indemnizar todas las calles y plazas señaladas en el plano; siendo de notar que dichos recursos deben ser necesariamente paulatinos, aún cuando se haga uso del crédito, que importa el pago de intereses, en los cuales se consumiría una gran parte de aquellos recursos ... ” \*

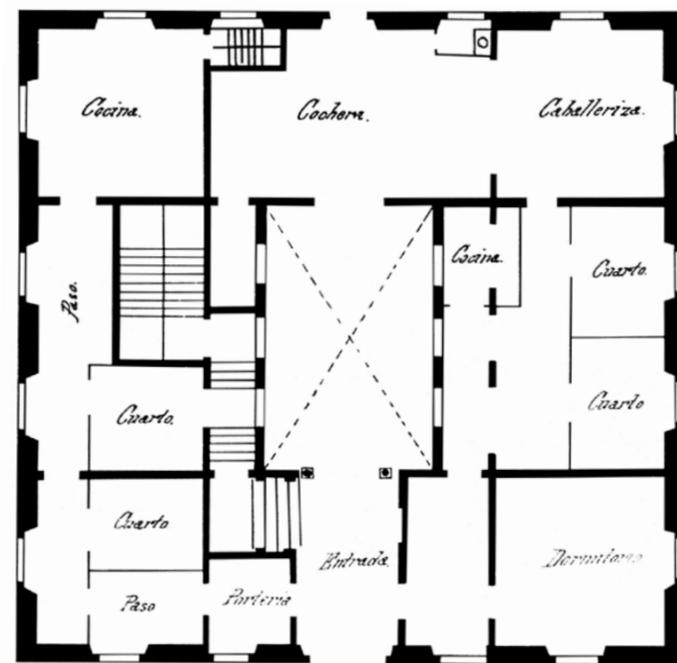
«Dictamen de la Comisión nombrada por los propietarios del ensanche de Barcelona», in *Revista de Obras Públicas*, 1865, XIII, vol. I, no. 3, p. 25-31

\* “ ...everything that can be expropriated in the Extension project should be expropriated; even when all the resources indicated in article 3 of the law were available from the outset they would by no means be enough to compensate all the streets and squares marked on the plan; it should be noted that those resources must of necessity be gradual, even when use is made of credit, which includes payment of interest, in which a large part of those resources would be consumed...”

“Sentence of the Committee appointed by the owners of the Barcelona extension”



Ildefons Cerdà. Proposal for a first-class house for the extension, facade and ground floor, 1855, AGA



### Cerdà in search of the ideal habitat: the atmospheric cube

Ramon Grau

An artist's true identity must be sought in their work. The simplicity and strength of the image which Ildefons Cerdà projected for the future Barcelona – the proportions and orientation of the rectangular grid and the line of the long diagonals shown on the 1859 extension and renovation plan – exemplify his strong affinity with the Catalan capital and his interpenetration with its *genius loci*, which had been more or less settled since the distant times of the Emperor Augustus. To update the plan for the Barcelona thoroughfares in a way that was in keeping with the city's centuries-old character – *decumanus* and *cardo* translated as *weft* and *warp* – as well as the expansive dynamic of the transport revolution, Cerdà drew primarily on the technical knowledge he had of his field of expertise, engineering. But the inspiration he drew from an unfamiliar discipline, medicine, which, itself, was undergoing a process of radical change, was just as important a factor in his conception of the new urban dwelling. More specifically, Cerdà's application of the hygienist theory of the atmospheric cube tied in urban regeneration with an imperative for social levelling based on strong moral convictions.

#### Cerdà's hygienist approach and the changing situation in Barcelona

The technocratic movement, which called for the widening of the city streets and promised to revolutionise communication systems throughout the territory, was generally welcomed by the middle class elites of the mid 19th century, eager as ever for material progress. The housing revolution was more controversial, although when the time came to call for the permanent demolition of the oppressive walls, the need to reduce building densities seemed to offer a more effective argument. And indeed the fight to emerge from beneath the boot of the Spanish army was the key item on the Barcelona town planning agenda during the Progressive Biennium of 1854-1856. For that reason, many began demanding hygienic single-family housing, surrounded by courtyards and gardens. Cerdà was not alone in calling for these changes, in the preliminary project of 16 December 1855; his demands were echoed by the authors of the guidelines for the extension of 28 June of the same year, signed by the jurist Manuel Duran i Bas and the architect Elies Rogent, among other members of the *ad hoc* civic committee.<sup>1</sup>

However, following the triumph over the Ministry of War, which would allow Barcelona to finally free itself of its fortress status, on 9 December 1858, the property owning classes were quick to abandon the philanthropic concerns they had nurtured since the cholera epidemic of 1854. They refused to see the need for the generous proportions of the plan put forward by Cerdà, which would be rounded off and submitted to the government in the first half of 1859. They made whatever use of the plan that suited them for their private residences, but in the layout of the rental apartments they were offering on the market, their primary focus once again switched to the usual calculations of economic profitability, tempered – that at least – by increasingly demanding building ordinances.

After the preliminary extension project – the focus of our attention here – Cerdà remained faithful to the hygienist programme, which features as a central argument in many of his writings including his proposal for the Barcelona extension and renovation approved by the government on 7 June 1859; the less well-known study of the interior renovations of Madrid (January 1861); and the general treatise on town planning published in 1867.

Shortly after Cerdà completed his full body of work, the advances in microbiology made by Louis Pasteur and Robert Koch diverted the attention of researchers to calculations of the quantity and quality of breathable air. In effect, microbiology tolled the death knell for the hygienist school that linked ill health and, in particular, the big epidemics to atmospheric contamination produced by the presence of animal miasmas. Historically, therefore, there was no real opportunity to defend Cerdà's proposals for the urban habitat in the full context of their original conception. Once the theoretical reference and the specific motivation had disappeared from view, the green city drawn up by Cerdà connected in the mid 20th century with a growing public nostalgia stirred by the mistreatment to which Barcelona was being subjected: the spectacle of an over-exploited extension, interminable city-centre renovations and a periphery in disorderly expansion.

The idealisation of Cerdà dates from that moment. In short, popular opinion saw him as having offered society a perfect urban development model, which, it was felt, had been betrayed by its executors.

Our fuller knowledge of events leads us to a very different conclusion, according to which the author of the extension plan, under significant external pressure, weakened in his defence of his original ideals.

But our character's pragmatism does not consist solely or principally in his willingness to sacrifice the integrity of a luminous scientific truth – supposedly attained with no hesitation and no possible turning back – in order to begin to put his work into practice and thereby help educate the social masses in the doctrine of progress. That is the theory of transition through

transaction, developed in Cerdà's later works. His practical inclination has a whole other dimension, because, for him, taking advantage of turning points with a view to transforming action was inseparable from the process of knowledge. At each stage of his career, his utilitarian perspective determined what field of knowledge he studied, guided his choice of which scientific sources to analyse and learn from, marked out his discoveries and the evolution of his theories and conditioned the theoretical packaging of all his work.

#### First calculation: the quota of breathable air

In his study of the conditions of habitability, Cerdà's direct inspiration was the *Traité d'hygiène publique et privée* (Treatise on Public and Private Hygiene) by Michel Lévy, a synthesis of the research done in France in the wake of the cholera epidemics of the 1830s. The work was published in two volumes in 1844-1845 and republished with additions and amendments in 1850 and again in 1857.<sup>2</sup> Through that reference work, Cerdà had access to the calculations of the needs for breathable air made by the physicist Eugène Pécllet, and published in *Traité de la chaleur* (Treatise on Heat): the first edition in 1828 and the second, the one used by Lévy, in 1843.<sup>3</sup> Cerdà took them as an article of faith: "Concerning the amount of atmospheric air needed to maintain good healthy breathing, it is well known from the experiments on ventilation performed under the direction of Mr. Pécllet and independent of any preconceived theoretical idea, that it is 6 to 10 cubic metres per hour and per person".<sup>4</sup>

Pécllet's premises were that the air in the atmosphere contains approximately 20% oxygen and 80% nitrogen and that only the former is useful for animal life; that the average human being breathes in and out twenty times per minute and the quantity of air inhaled each time is 656 cm<sup>3</sup>; that each breath consumes up to one third of the oxygen contained, transforming it into carbonic acid, which is unsuitable for the respiratory function; and that when only one third of the oxygen is left breathing becomes difficult.

In terms of oxygen consumption, Pécllet estimated that 0.537 m<sup>3</sup> of air per person and hour are required. But "in that hypothesis the air itself would pass many times through the lungs, and that is a cause of ill health which is to be avoided, especially in large gatherings, because the air exhaled contains water vapour and, probably, animal matter that can be dangerous to breathe".<sup>5</sup> To avoid that, the quota is raised to 0.787 m<sup>3</sup>. However, an extraordinary leap would have to be made to the 6.937 m<sup>3</sup> to counter the contaminating effects of cutaneous perspiration, which were considered extremely harmful by the hygienists.

In practice, Pécllet inclined towards the intermediate calculation;<sup>6</sup> whereas Lévy opted for the more generous one, and Cerdà tended to broaden the range, as we have seen; perhaps because he thought that air, "when

breathed out of our lungs, has lost its oxygen"; in other words the whole of the content in the breathable volume, and not just one third.<sup>7</sup>

Six years earlier, in 1849, the chemists Victor Regnault and Jules Reiset had revealed, in their rigorous experiments on animal respiration, the small quantitative significance of bodily exhalations other than pulmonary respiration, concluding, without denying the existence of the miasmas, that their noxious effects were greatly exaggerated.<sup>8</sup> But Lévy explicitly rejected their findings, restating the traditional theory: "The vapours given off by the human surface mix with the air and dissolve in it; they are accompanied by animal matter that is not long in giving the air a bad odour; and that matter is indisputably the most powerful cause of ill health." His conclusion seemed incontrovertible: "The question of the miasmas finds its answer in the centuries-old experience of medicine, not in chemical analysis."<sup>9</sup>

#### Second calculation: the marital bedroom

In relation to architecture, the aim of the hygienist school was to guarantee people a suitable quota of air for breathing freely and maintaining good health in enclosed spaces at all times. It was a problem of quantity and quality. In an urban environment the quality of the air in the atmosphere depends partly on conditions external to the buildings themselves. The hygienists pointed to high urban densities as a negative factor owing to the concentration and circulation of gases produced by activities and animal miasmas of various origins. But it was the belief in the toxicity of the miasmas generated by people themselves in the act of breathing that led to the conclusion that human occupation of the living space reduced the quality of the air as well as the quantity of oxygen in the immediate environment. And so the solutions had to be sought, first and foremost, in the layout of urban dwellings.

The approach put forward by the hygienist doctors and adopted by Cerdà begins with an exhaustive study of the domestic setting and then gradually expands to take in the urban whole – not vice versa. This last point marks their main point of departure from the town planning architects of the time and is one of the main strengths of the 1859 plan. Cerdà recommended that Barcelona, at that time eight times denser than London and with double the rate of mortality, strive to achieve an urban density similar to that of the British capital. And he used these – not very accurate – calculations<sup>10</sup> to argue for the unrestricted extension, to link the old city with the towns and suburbs of the plain and to devise a general pattern for the layout. But his starting point had to be an analysis of the elemental cell of the human dwelling, together with the development of an alternative on this microterritorial scale.

From the outset, human constructions designed for living have had openings which, apart from their purpose of enabling access and letting in

light, allow for the free circulation and renewal of the air supply. In the wake of the studies of the modern chemists and physicists that began in the late 18th century and culminated in the middle years of the 19th, these ideas became more specific. The question was then posed as a hypothesis that could be resolved by experiment. The point was to develop our knowledge of the composition of air, of the dynamic of fluids and animal breathing to calculate what volume of air a hermetically sealed room should contain to guarantee the healthy breathing of a person for a particular period of time. The result was the atmospheric cube.

Taking Pécllet's highest estimate, which is the one most consistent with the belief in the decisive influence of human miasmas on health, Michel Lévy tackled the definition of the atmospheric cube in the real case closest to the simple hypothesis: the bedroom. If each person consumes an average of 6 m<sup>3</sup> of air per hour, and night time rest lasts between 7 and 8 hours, the corresponding room, with an effective ventilation system, would have to contain between 42 and 48 m<sup>3</sup> of air, which the French hygienist rounded down to within the range of 40 to 45 m<sup>3</sup>.<sup>11</sup>

Cerdà followed Lévy's reasoning closely and applied it, not to the single bedroom, but the marital one, regarded as the core of the family cell, the basis of all society: "the minimum capacity of a bedroom which has to be closed and has no ventilation apparatus, if it has to contain two people for eight hours, can be determined by the expression  $2 \times 8 \times 6 = 96$  cubic metres, which amounts to approximately 50 cubic metres per individual per night. By the end of that time ventilation will have become absolutely necessary."<sup>12</sup>

The distribution of the volume of air in the marital bedroom was thought to depend on the dynamic of the air in relation to the temperature and its variations. The air expelled by exhalation and perspiration, warmer and less dense, is displaced upwards. This, in turn, produces "a constant current of air, plenty strong enough to sweep away and confine to the upper region of the rooms any mephitic vapours as they are produced"; which, it was thought, explained "why we can spend the long hours of night enclosed in a small precinct without dying".<sup>13</sup> For that reason, it was advisable to make the ceilings higher, and so the author of the preliminary project placed them 4 or 5 metres above the floor, with the result that the 96 to 100 m<sup>3</sup> of the main bedroom of the home were obtained on a square ground plan with sides of between 4 and 5 metres in length: in other words, a perfect cube.

The same vertical proportion is applied to the other rooms of the family home, on surface areas that vary according to the different functions and include at least two more bedrooms, to allow for the separation of the children by sex. All in all, Cerdà calculated that the total surface area of the bedrooms had to be between 41.75% and 56.23% of the dwelling, and that

applied to all social classes. Indeed, in his words, it was necessary to adopt "in the houses that are to be used by the rich classes, just as in the ones designed for the working classes, a layout that corresponds to what Christian feelings and the culture of our time demand". And that meant that "it is indispensable for the number and capacity of the different rooms that make up a dwelling to be in relation to the probable number of people who will occupy it and for them to have within it independence and separation according to their differences in sex and status".<sup>14</sup>

Starting from that principle, which serves as a frontispiece to the proposal section of his 1855 report, Cerdà establishes how to fit the dwellings into eight categories of plots of land which are to be the building blocks of a city, though in the preliminary project he had not yet finished the design.<sup>15</sup> Social and economic considerations qualified the tendency towards equality without cancelling it out, at least as far as hygienic results were concerned. These depended partly on the green spaces that the design of the blocks and squares in the plan would guarantee for all the houses in the renovated city; but they also derived from the suppression or reduction of the differentiation of the height of the ceilings at the different levels of the construction. It is a characteristic principle of the approach – not hygienist but medical in origin – proposed by Lévy and adopted by Cerdà: "Once the number of storeys has been fixed, distribute among them equal measures of the air confined between the four fundamental walls; to sacrifice, as is the custom, the upper storeys to the lower ones is to inflict quite different conditions of life on their occupants".<sup>16</sup>

#### The criticism of the Barcelona habitat

The contrast between the theoretical atmospheric cube and the Barcelona habitat bequeathed by history was so radical that it enabled Cerdà to bypass the empirical differences between the houses of the city and, therefore, the conditions of life of their respective users and provide a general critique. All the samples considered in the 1855 report – indeed, they are not real houses, but the models authorised by current building ordinances – fell well below that ideal. Therefore, the regeneration Cerdà preached was meant to appeal to the interests of the whole city and all its social groups, even the most privileged, and could not be reduced to a specific problem affecting the workers and the poor.

The table entitled *Ordinary surface and distribution of the building sites, height of the ceilings and volume of air contained in each room* shows that the average ratio of air per person and night time hour is 2.54 m<sup>3</sup> in the first category of houses, 3.13 in the second category, 2.30 for those in the third category, 1.42 in the fourth, and 1.17 in the houses of La Barceloneta. In short: "society carries its greed to the point of not allowing us more than 1.4 cubic metres to

3.1 cubic metres, in other words a quarter of the minimum for the poor and half for the well-to-do classes”. The comparison provided in another table, entitled *Classification of houses, number of people who live in them, surface area they occupy, price and amount of the site, price and amount of the construction, total amount and revenue they produce*, revealed a startling trend, which this time did point to the mistreatment of the lower classes: “Let us also note, so that the unfairness with which society treats the poor classes will be quite evident, that whilst with their rent they pay 1% more interest to the landlord’s capital, he reduces their ration of air to one half less than he grants the well-to-do classes”.<sup>17</sup>

It is noteworthy that those critical observations were made “setting aside the most serious defects inside many of the city’s old houses in terms of the health of their occupants, and confining myself solely and exclusively to the ones that have been built and are being built in accordance with the current ordinances”.<sup>18</sup> In the case of the latter buildings, whose improved standards stemmed from the work of the municipal architect Josep Mas i Vila in the 1820s, Cerdà calculated the average volumes of air of the different levels of the construction, and by doing so ignored the greater availability on the main floors, which might have come closer to acceptable levels from the hygienist point of view and would therefore have diminished the force of his criticism.

A deeper empirical knowledge of the condition of buildings in Barcelona came to the surface in the 1859 report on the extension and renovation.<sup>19</sup> It nonetheless repeated, with few differences, the numerical conclusions and comments of the 1855 preliminary project.<sup>20</sup> An exhaustive and fully-quantified study of the Barcelona habitat would only appear in the impressive second volume of the *Teoría general de la urbanización* (General theory of town planning), published in 1868. And, through the statistical syntheses in this work, it can be observed that the parts of the city built according to the models criticised in the 1855 tables – in particular, in the area around the Rambla, Plaça Reial and Carrer de Ferran – had the lowest mortality rates in the city.

The implication is clear. Cerdà had established a causal link between the high mortality rates of Barcelona and certain newer architectural models. With their superior standards, they guaranteed 50% of the volume of air established in Péclet’s broadest calculation, based on the theory of miasmas, which was about to be definitively eclipsed.

### Chimneys and the deflation of the atmospheric cube

In their application of the theory of the atmospheric cube to the layout of bedrooms, both Lévy and Cerdà incorporated what was in essence a theoretical condition as if it were actually an empirical truth, based on the construction of a hypothesis and its rigorous testing in laboratory conditions.

Lévy stated that “bedrooms do not admit any effective ventilation system” and criticised the volume of air in the dorms of the modern barracks of the French army – 16 m<sup>3</sup> per night and per man –, for having “taken into account the accidental ventilation from the opening of doors and windows, through the joints, etc.”, which could be lacking or even harmful.<sup>21</sup>

For his part, Cerdà said that “experience teaches us that we cannot rely on a very effective renewal of the air by means of the joints of the doors and windows”. He proceeded to argue that “concerning the ventilation and heating systems to draw the corrupted air out of the rooms or introduce an equal amount of pure air without causing harmful draughts, since so far no system which is easy and economical to apply has been invented, we have had to give, to the bedrooms especially, a greater capacity than we would have otherwise allocated them”.<sup>22</sup>

According to Cerdà, chimneys, which were rare in bedrooms, could be used in the event of illness, though their function of evacuating gases had to be admitted. And the same purpose could be served by making openings in the upper part of the rooms, which were especially useful in the case of children’s bedrooms. But he ignored – deliberately or otherwise – the fact that that evacuation movement could not occur without creating a reverse effect, i.e., an input of renewed air.<sup>23</sup>

The functioning of special devices for renewing the air – in particular old and modern chimneys – was at that time an important object of scientific study, with particular regard to the dynamic of fluids. Aside from Péclet’s own treatise, published in a completely revised third edition in 1860, the decade would witness an abundance of new empirical approaches, such as Arthur Morin’s, specifically devoted to the ventilation and heating of buildings.<sup>24</sup>

It would be difficult to understand Cerdà’s stubbornness in discarding the different possibilities of providing air in bedrooms during rest time if it were not the case that simplification is always more practicable than complexity. To be able to offer a closed, non-negotiable parameter was of fundamental importance in the year 1855, especially in view of the recent cholera epidemic, the workers’ rising demands, the half-completed demolition of the walls and the prolonged uncertainty over the city’s fortress status.

In the “Hygienic discussion” of the 1859 report, Cerdà broadened his referencing of scientific authorities – Lavoisier, Humboldt, Gay-Lussac, Menzies, Dumas, Andral i Gavarret, Leblanc i Poumet, and, of course, Péclet – but stayed firm to his original estimate of 6 to 10 m<sup>3</sup> per person per hour. Indeed, he now cited special cases drawn from the bibliography which suggested the need to multiply that provision; and while talking about the effect of the different seasons of the year, he added that the quota would have to be raised in the summer, since heat makes the air less dense. It is only to compensate for

that increase without having to expand the atmospheric cube of bedrooms – already established in the preliminary project – that Cerdà included, notably for the first time, a mention of artificial ventilation systems.<sup>25</sup>

However, practical considerations such as the incorporation of the renovation of the city’s interior into the extension plan – the feature that most sets the 1859 project apart from the 1855 preliminary project –; the inclusion of ordinances, and the conception of an economic plan to fund the programmes likely influenced Cerdà’s views on the practicable models available for both the new urban dwelling and the city’s future development.

On the one hand, it made sense to improve the conditions of the buildings that were already standing, but significantly increasing the volumes of air enclosed would have almost certainly meant the complete destruction of the properties. It was therefore necessary to focus on more modest improvement and regeneration work and to manage expectations for the future city downwards. Indeed, the knowledge which Cerdà was acquiring about the differential mortality within the walled precinct, which partly redeemed the most modern constructions, allowed him to adopt a more realistic – and pragmatic – stance.

At the same time, the extension ceased to be seen as an independent goal in and of itself. It promised to be so profitable for the owners of the land that would be reclassified from rural to urban that the imposition of low density standards had become conceivable. The extension was also seen as the only means of obtaining the immense flows of money required to pay compensations to the other owners, those of the old city, who would be affected by the works to extend the road network and clean up the built-up mass. The need to stimulate the market, while favouring the state’s interests in developing the land where the walls had stood, also put increasing pressure on the town-planners to increase the density of the new building area.

In 1859, this shift in priorities was more perceptible in the plan than in the report. However, it would gather pace in the ensuing years as the extension was set in motion. The report on the interior renovation of the city of Madrid, signed in January 1861, is widely viewed as a recapitulation of that experience. The section of the study devoted to hygiene contains a whole series of observations provided by contemporary physicists and chemists which had been entirely ignored in Cerdà’s earlier writings.

As far as the atmospheric cube was concerned, Cerdà now said: “Chemistry teaches us that the amount of air consumed by man in an hour to provide the necessary fuel for his machine is 6 to 10 cubic metres. Therefore, supposing that his average daily rest or sleep is 6 hours, the room which he inhabits for that purpose should be 36 to 60 cubic metres. That is based on the assumption that the room has no ventilation such as that provided by the

so-called French chimneys or other similar devices which, despite not having been built with this function in mind, still served admirably as a means of regularly renewing the air so that the average capacity of the room can produce the effects of a larger one.”<sup>26</sup>

It was not just a matter of revising the calculation of the cube downwards – by means of an arbitrary reduction of the hours of rest – but of making it more flexible through the use of previously neglected variables. And that – while not spelling a complete end to the belief in miasmas – effectively put an end to the theory’s influence on the sizing of homes and the development of urban density models. The change of medical paradigm in the later stages of the 19th century would eventually validate Cerdà’s shift in direction, without taking away from his work’s overall impact and the humanistic drift of his urban model.

### NOTES

1. A wider exploration of that parallel is to be found in Ramon GRAU I FERNÁNDEZ, “Cerdà i l’higienisme: la prefiguració de l’eixample”, in Joan FUSTER SOBREPÈRE (ed.), *L’Agenda Cerdà. Construïnt la Barcelona Metropolitana*, Barcelona, Institut Cerdà and Ajuntament de Barcelona, 2010 [at press].

2. Michel LÉVY, *Traité d’hygiène publique et privée*, Paris, Baillière, 1850 (2nd ed.) and 1857 (3rd ed.).

3. Eugène PÉCLET, *Traité de la chaleur considérée dans ses applications aux arts et aux manufactures*, Paris, Librairie Scientifique-Industrielle de Malher et Comp., 1828.

4. Ildefonso CERDÀ, “Memoria descriptiva de los trabajos facultativos y estudios estadísticos hechos de orden del Gobierno y consideraciones que se han tenido presentes en la formación del anteproyecto para el emplazamiento y distribución del nuevo caserío”, in *Cerdà y Barcelona*, Madrid, Ministerio de Administraciones Públicas and Ajuntament de Barcelona, 1991, p. 71, para. 72.

5. “...le même air passerait un grand nombre de fois dans les poumons, et c’est une cause d’insalubrité qu’il est important d’éviter, surtout dans les grandes réunions, car l’air exhalé contient de la vapeur d’eau et probablement des matières animales dont la respiration peut être dangereuse”, PÉCLET, *Traité de la chaleur...*, vol. II, pp. 353-354.

6. PÉCLET, *Traité de la chaleur...*, vol. II, p. 356.

7. CERDÀ, “Memoria descriptiva...” (1855), p. 71, para. 71.

8. “Cependant on nous objectera, peut-être, que, pour maintenir l’air de notre cloche dans les conditions normales, il ne suffit pas d’absorber l’acide carbonique produit et de remplacer l’oxygène consommé; qu’il faut encore absorber les miasmes qui se dégagent du corps de l’animal, et que l’on regarde généralement comme pouvant exercer une influence très nuisible sur sa santé, bien que leur quantité soit ordinairement trop petite pour pouvoir être reconnue par l’analyse chimique. Sans nier l’existence de ces miasmes, nous pensons qu’on en exagère beaucoup les effets”, VICTOR REGNAULT and Jules REISET, “Recherches chimiques sur la respiration des animaux des diverses classes”, *Annales de chimie et de physique*, 3rd series, vol. 26, p. 518.

9. “Les vapeurs qui se dégagent de la surface humaine se mêlent à l’air et s’y dissolvent; elles sont accompagnées de matières animales qui ne tardent point à communiquer à l’air une mauvaise odeur; et ces matières sont sans contredit la cause la plus puissante d’insalubrité”. “La question des miasmes a sa solution dans l’expérience séculaire de la médecine, non dans l’analyse chimique”, LÉVY, *Traité d’hygiène...*, 1857, vol. I (3rd ed.), pp. 650-651 and 651, note 1, respectively.

10. GRAU, “Cerdà i l’higienisme: la prefiguració de l’eixample ...”.
11. LÉVY, *Traité d’hygiène ...*, 1857, vol. I (3rd ed.), p. 655.
12. CERDÀ, “Memoria descriptiva...” (1855), p. 71, para. 73.
13. CERDÀ, “Memoria descriptiva...” (1855), p. 72, para. 78.
14. CERDÀ, “Memoria descriptiva...” (1855), p. 73, para. 89.
15. CERDÀ, “Memoria descriptiva...” (1855), p. 74 and 95-99, paras. 96-97 and plates X-XIX.
16. “Le nombre des étages une fois arrêté, distribuez par masses égales entre eux l’air que vous confinez entre les quatre murs fondamentaux; sacrifier, comme on le fait, les étages supérieurs aux inférieurs, c’est infliger à leurs habitants des conditions très différentes de vie”, LÉVY, *Traité d’hygiène...*, 1857, vol. I (3rd ed.), p. 628.
17. CERDÀ, “Memoria descriptiva...” (1855), p. 69-70, paras. 64a and 64b (tables) and 67 (comments).
18. CERDÀ, “Memoria descriptiva...” (1855), p. 68, para. 64.
19. Ildefonso CERDÀ, “Teoría de la construcción de las ciudades aplicada al proyecto de reforma y ensanche de Barcelona” (1859), in *Cerdà y Barcelona...*, pp. 152-172, paras. 175-208.
20. CERDÀ, “Teoría de la construcción de las ciudades...” (1859), p. 169, para. 194.
21. “Les chambres à coucher, qui n’admettent point de ventilation efficace, doivent être cubées d’après la durée moyenne du séjour au lit [...]. [...] les auteurs de ces fixations ont compté sur la ventilation accidentelle par l’ouverture des portes et fenêtres, par les joints, etc. Mais cette aération peut manquer, ou devenir nuisible”, LÉVY, *Traité d’hygiène...*, 1857, vol. I (3rd ed.), p. 655.
22. CERDÀ, “Memoria descriptiva...” (1855), p. 71, para. 73, and p. 73, para. 94, respectively.
23. CERDÀ, “Memoria descriptiva...” (1855), p. 73, paras. 90-91.
24. PÉCLET, *Traité de la chaleur considérée dans ses applications*, Paris, Victor Masson, 1860; Arthur MORIN, *Études sur la ventilation*, Paris, Hachette, 1863.
25. CERDÀ, “Teoría de la construcción de las ciudades ...” (1859), p. 334-335, paras. 897-900.
26. Ildefonso CERDÀ, “Teoría de la viabilidad urbana y reforma de la de Madrid” (1861), in *Cerdà y Madrid*, Madrid, Ministerio de Administraciones Públicas and Ayuntamiento de Madrid, 1991, p. 124, para. 602.

## Towards the metropolitan dimension, 1860-1897

The growth and concentration of the population were the first signs of the gradual transformation of Barcelona from a closed city to an expansive metropolis. However, the need to control the process and create a suitable governing body soon became apparent.

The centre of the new agglomeration, where the official buildings, financial institutions and luxury traders were located, continued to be nurtured. The embellishment and monumentalisation of the city were aimed at the construction of an identity. International promotion and tourism went hand in hand with this process of metropolisation.

Rius i Taulet, mayor for nine years and on four occasions between 1872 and 1889, led the enterprise of making Barcelona one of the great European cities.

### The process of growth

The distribution of growth unevenly affected the pieces that made up the rural-urban continuum of the Barcelona plain, resulting in a mish mash of expansive zones, transition areas, obsolete spaces and marginalised districts.

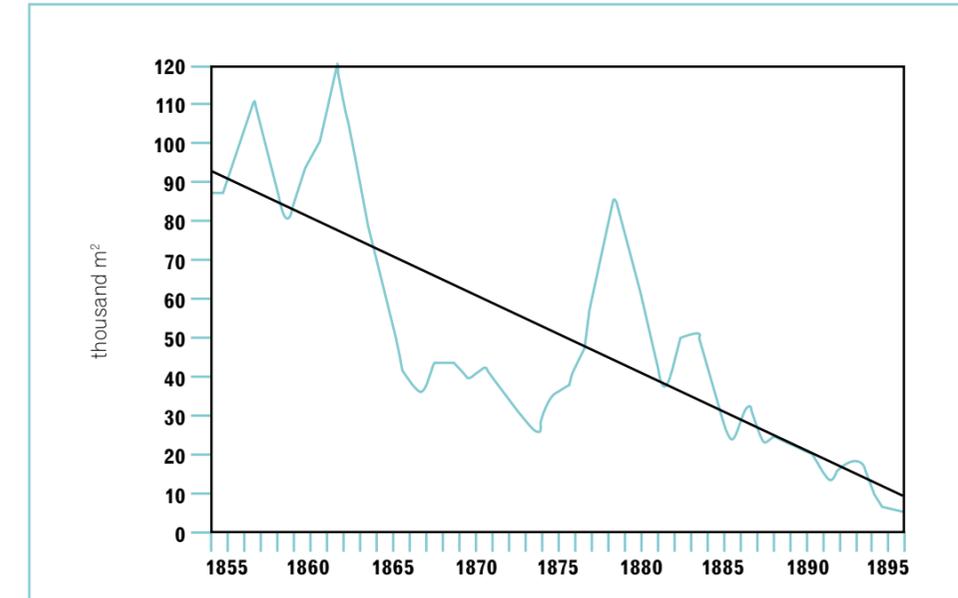
These variations were alleviated by the flows that connected the whole territory: the transport networks, the spread of industry, the planned extension of basic city services beyond the municipal boundaries, and the efforts to standardise the amenities of the different municipalities.

The council concentrated on the consolidation and enlargement of the extension. Meanwhile, the reshaping of the old city, in the hands of private enterprise, did not prosper.

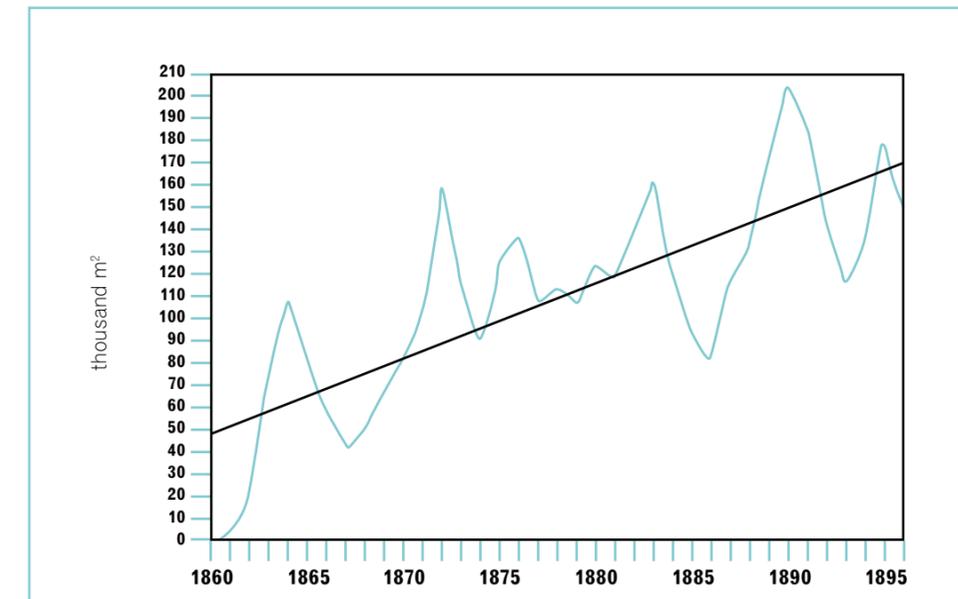
“El Ayuntamiento de San Martín de Provensals otorga desde ahora al de Barcelona la debida autorización para que pueda principiar y terminar en todo el trayecto comprendido en su jurisdicción, los trabajos de gran cloaca colectora de las calles de Marina y Diagonal en la forma proyectada y aprobada por el segundo de dichos Ayuntamientos, siempre que ponga especial cuidado en que no se interrumpan los servicios públicos y particulares y sin perjuicio de las indemnizaciones que procedan.” \*

\* “As of now, San Martín de Provensals Council grants Barcelona Council due authorisation so that it can begin and complete, along the route included in its jurisdiction, the works for the large main drain in Calle de Marina and Diagonal in the form planned and approved by the second of those Councils, provided it takes special care not to interrupt the public and private services and without prejudice to any compensation that may apply.”

Agreement between Barcelona and Sant Martí Councils for the large main drain in Carrer de Marina, 31 December 1885



Construction (in m<sup>2</sup>) in the old centre. Tendency line



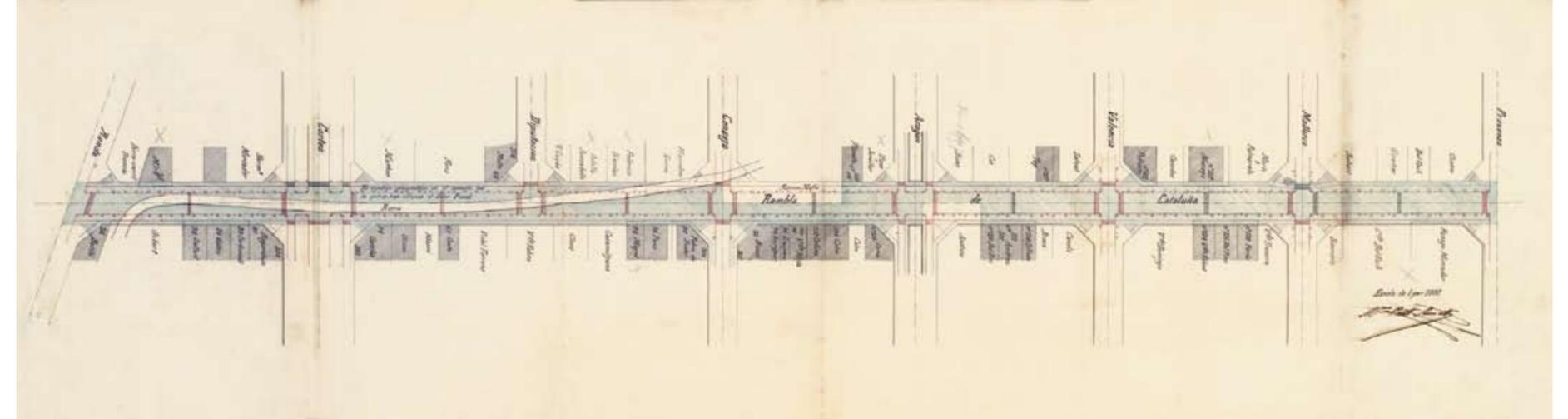
Construction (in m<sup>2</sup>) in the extension. Tendency line

## Barcelona, the shaping of a capital

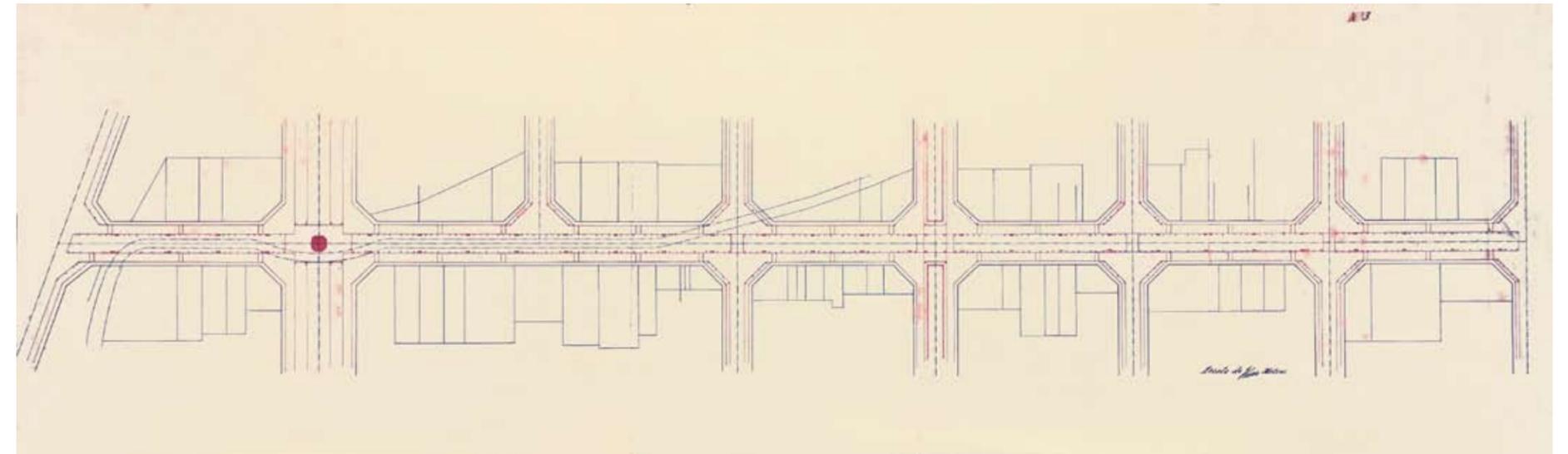
	1787	1857	1910
Province of Barcelona	366,843	714,424	1,140,781
Barcelonès county	128,505	251,998	628,619
Barcelona, city	111,410	183,787	376,815
Towns on the outskirts	5,506	46,820	210,469
Barcelona + outskirts	<b>116,916</b>	<b>230,607</b>	<b>587,284</b>
Rest of the county	11,589	21,391	41,335
Adjoining counties <sup>1</sup>	104,453	207,913	254,411
Remaining counties	133,885	254,513	257,711
<b>Catalonia</b>	<b>899,531</b>	<b>1,661,291</b>	<b>2,084,868</b>
Catalonia excluding the province of Barcelona	532,688	946,867	944,087

1. Baix Llobregat, Maresme, Vallès Oriental and Vallès Occidental

Jordi NADAL, «La població», in Joaquim NADAL and Philippe WOLFF, *Història de Catalunya*, Vilassar de Mar, 1983, p. 85



Mariano Prat i Amat. Project for the development of Rambla de Catalunya between La Ronda and Carrer de Provença and land belonging to the owners' association, 1884 and 1886, AMAB



Plan for the development of Rambla de Catalunya, 1887, AMAB



Josep Esplugas Puig. Salvador Piera house at the corner of Carrer de Balmes and Carrer de Rosselló, 1890s, BNE



Unknown author. View of the 1888 Universal Exhibition in Ciutadella Park, AFB



Josep Esplugas Puig. Passeig de Gràcia in the 1880s, BC



Unknown author. Panorama of the city from Gràcia, with Collserola in the background, last third of the 19th century, Tibidabo Archive



Josep Esplugas Puig. Passeig de Colom during the 1888 Exhibition, AFB



Frederic Ballell. Plaça de Catalunya in the early 1890s, AFB



Barcelona a la vista. View of the Putxet district in the early 20th century, CCCB



Postcard of Barcelona from the early 20th century, CCCB

### Milestones of the metropolitan ambition

Rhetoric is inseparable from politics; both require skill in presenting an argument and convincing the reticent.

The classic political discourse, between notables, was no longer viable at the end of the 19th century. Demonstrations, protests, exhibitions, trade fairs and commemorations multiplied, generating images with strong symbolic overtones. Artistic creation – especially architecture – communicated well with the masses.

The University building, Ciutadella Park and the Universal Exhibition complex expressed the values that bound Barcelona society and were milestones in the evolution of Catalan architecture.

“El Señor Rius empezó proclamando, como verdad inconcusa que el pueblo no vive sólo de pan sino que necesita igualmente de pasto intelectual. En un extenso discurso probó que la institución [els Jocs Florals] se remontaba a los buenos tiempos de la monarquía aragonesa y que su objeto no era más que cantar el amor, la fe y la patria. Dijo que nunca como ahora en que se proclamaba el principio de la autonomía provincial era natural que se fomentase una fiesta enlazada con nuestras más gloriosas tradiciones. El Ayuntamiento dice no puede retirarle su apoyo porque no puede ser infiel a su origen, ni a sus tradiciones, ni al idioma que aprendimos en el regazo de nuestra madre.” \*

\* “Señor Rius began by proclaiming, as an indisputable truth, that the people cannot live on bread alone but also need intellectual nourishment. In a long speech he proved that the institution [the Jocs Florals] dated back to the good times of the Aragonese monarchy and its aim was none other than to sing love, faith and the motherland. He said that never as now, when the principle of provincial autonomy was being proclaimed, had it been so natural to promote a festival linked to our most glorious traditions. The Council says that it cannot withdraw its support because it cannot be unfaithful to its origin, or its traditions, or the language we learned at our mother’s knee”.

Barcelona Council, Municipal minutes, 1869

### The University

Many of the aforementioned metropolitan milestones spoke of the rejection of the state of affairs imposed in 1714.

The history of Barcelona University is a case in point. Felipe V had formerly moved the University to Cervera but the council brought it back to Barcelona when liberalism became the dominant political force. Housed in the Carme Monastery during the time of the revolutionary confiscations, the University found its permanent place in the extension and was the first and only large building constructed in the new city with public financing.

The building was completed in 1868, although minor works went on until 1884. The impressive decoration of the Saló de Graus was in keeping with the state character of the institution.

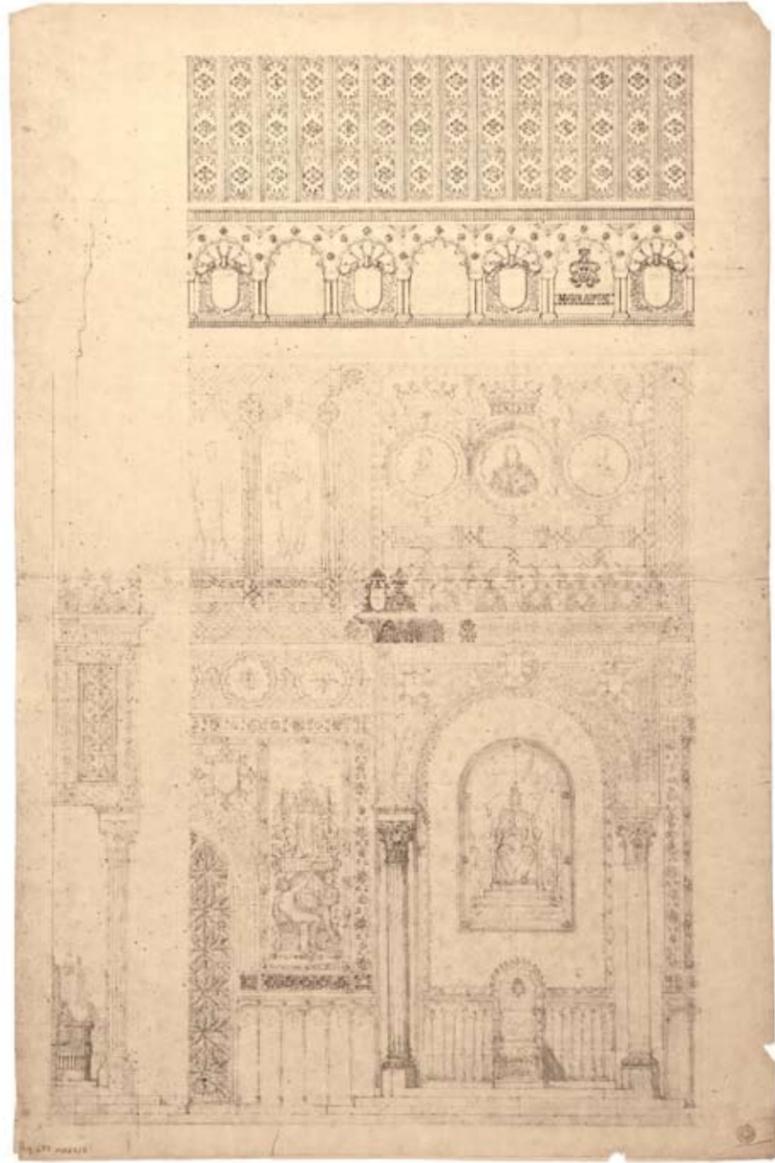
“La arquitectura que he adoptado ha sido una traducción libre de nuestros monumentos civiles del siglo xv por agradarme mucho la nobleza y majestad que campea en la primera época del renacimiento muy acorde con los grandes ideales que debía expresar y por ofrecer libertad en la expresión hermanándola con nuestro carácter y, sin buscar las columnas y los cornisamientos griegos y romanos, emplear sus formas esenciales dándoles nueva vida y disposición. Debo confesar ingenuamente que desde mis primeros estudios en el noble arte que profeso, este género es el único que siento para el desarrollo de proyectos de carácter civil, por encontrar en él formas y proyecciones que satisfacen a mis convicciones.” \*

Elies Rogent, *Memoria facultativa de la Universidad Literaria de Barcelona*, 1861

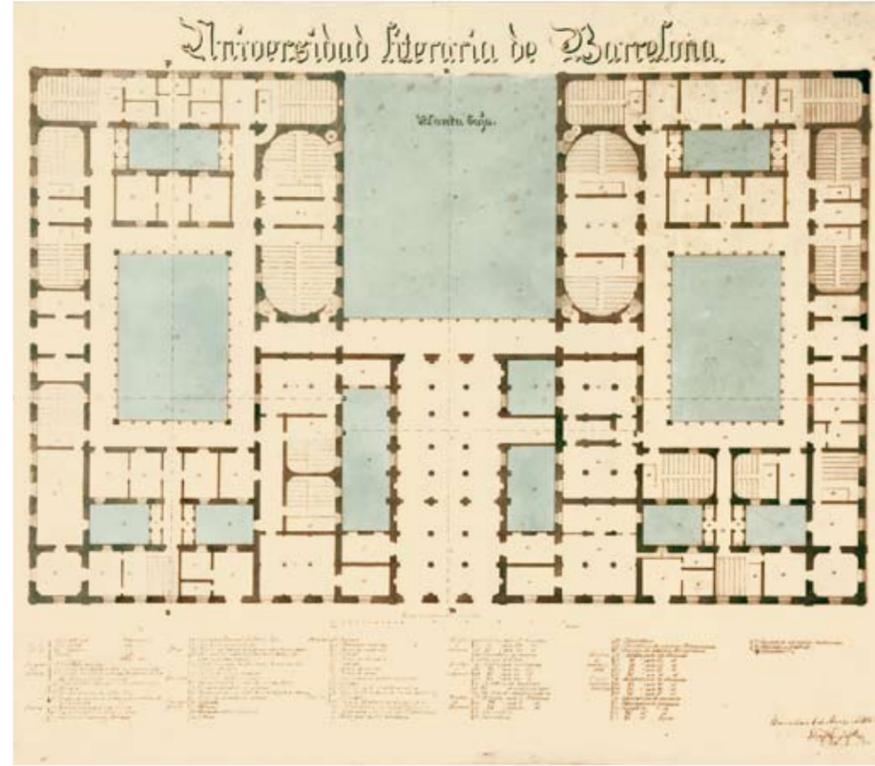
\* “The architecture I have adopted has been a free translation of our civil monuments of the 15th century since I very much like the nobility and majesty that reigned in the first period of the Renaissance in close accordance with the great ideals it had to express and because it offers freedom in expression uniting it with our character and, without seeking the Greek and Roman columns and cornices, its essential forms can be used to give us new life and disposition. I must confess ingenuously that from my first studies in the noble art I profess, this genre is the only one I feel for the development of civil projects, as I find it in the forms and projections that satisfy my convictions”.



University of Barcelona, photo signed by Elies Rogent, 1865, AFB



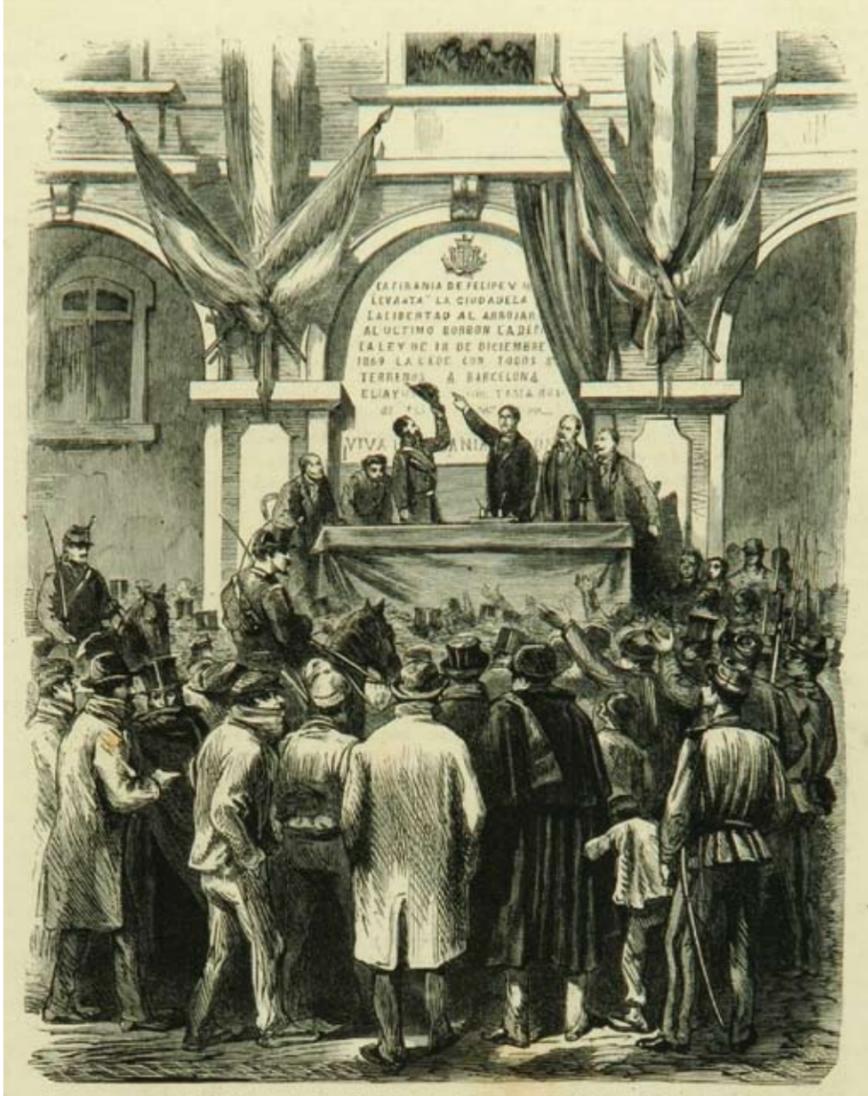
University of Barcelona. Decoration of the Main Hall, 1870, COAC



Elies Rogent. Project for the University of Barcelona, ground floor, 1862, COAC



Elies Rogent. Project for the University of Barcelona, cross section, 1862, COAC



Ceremony of the handing over of the land of La Ciutadella to the city of Barcelona, 22 December 1869, *La Ilustración Española y Americana*, 25 January 1870

### Ciutadella Park

In 1868 revolutionary self-affirmation and public concern about the deficiencies of the extension – no green spaces, no amenities, no landmark buildings – stirred up controversy around the use of the land of the Ciutadella.

The final decision in favour of the park came into conflict with the provisions of the 1859 plan. Fontserè's winning project combined the garden with the construction of a market and the creation of a new district on one side, with leisure facilities on the other.

The operation was a triumph, the result of a favourable political juncture and fruitful negotiations with the state which, for the first time, satisfied the demands of the city council.

“Está ya fuera de cuestión que la capital del Principado no goza de condiciones favorables a la salubridad general y que este punto de vital interés para todo el vecindario no ha sido mirado nunca con la predilección debida. De este descuido proviene que en Barcelona no existan jardines y sitios de esparcimiento y que las plazas espaciosas hayan pasado a la categoría de aspiraciones quiméricas o poco menos.”\*

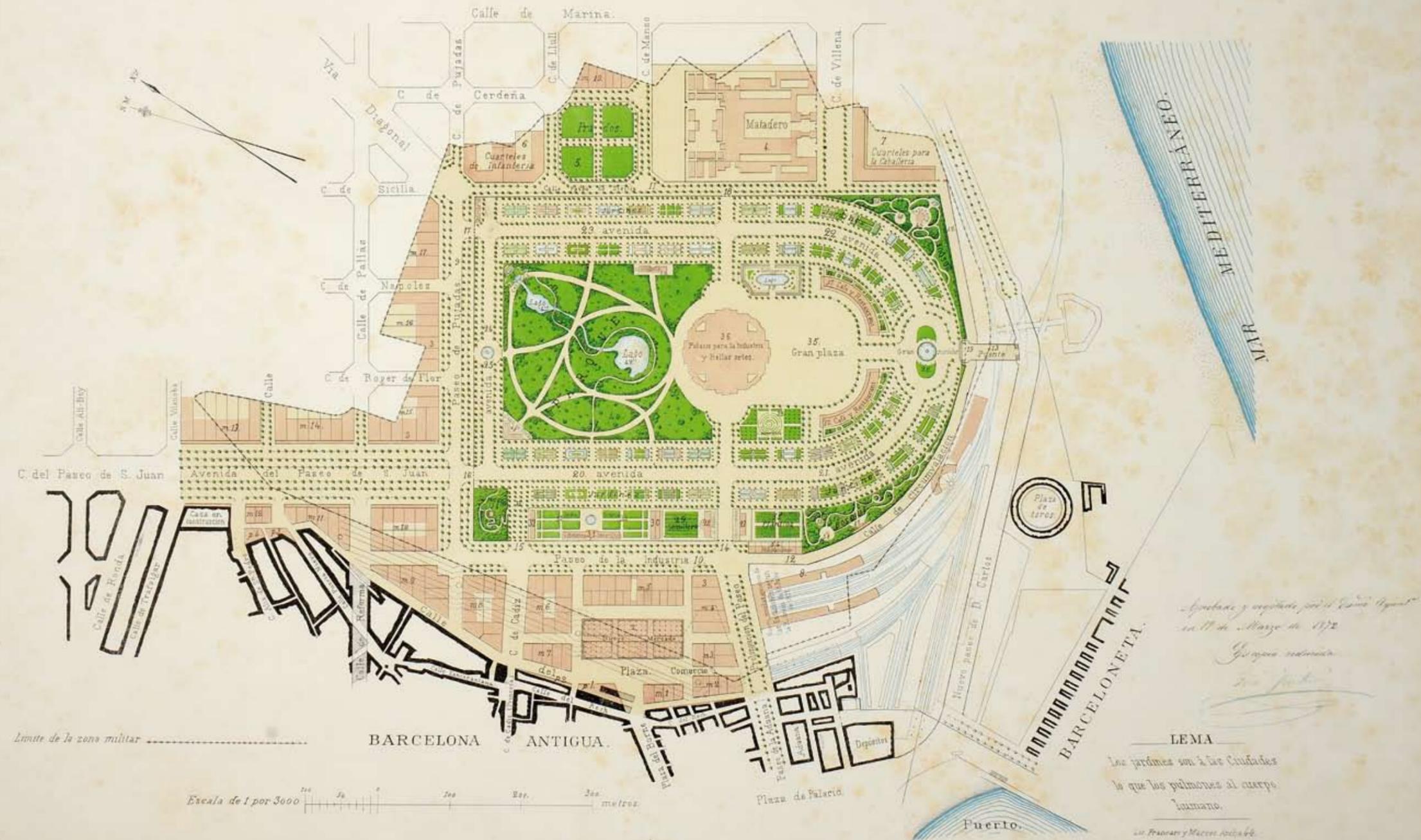
\* “It is already beyond dispute that the capital of the Principality does not enjoy conditions favourable to the general health and that this point of vital interest for the whole neighbourhood has never been looked at with the due predilection. From that negligence comes the fact that in Barcelona there are no gardens and leisure areas and that the spacious squares have entered the category of chimerical aspirations or little more.”

J. Fontserè, Project for a park and gardens on the land of the former Barcelona citadel, 1872



Ceremony marking the beginning of the demolition of the citadel by agreement of the Provisional Revolutionary Council on 3 October 1868, *Le monde illustré*, number 603, 1870

# PLANOS DE UN PARQUE Y JARDINES EN LA EX-CIUDADELA. POR JOSÉ FONTSERÉ



Josep Fontserè i Mestres. Project for the development of the land of La Ciutadella and surroundings, 1872, AHCB



Onofre Alzamora. Bird's eye view of Barcelona, 1860, AHCB



Antonio Casteluch Vendrell. View taken from the Don Carlos Fort side 380 metres from the sea and 350 metres above sea level, 1882, AHCB

### The Universal Exhibition

The Exhibition was a private project for which the council ceded some land in the Park. The failure by the private sector to meet expectations prompted the initial public intervention.

Later on, the state was persuaded to commit itself to the financing and promotion abroad of the Exhibition, and the opportunity was seized to obtain the transfer of military buildings and land that were blocking the extension at different points of the city.

The new people in charge of the Exhibition made little use of the buildings they had inherited; they finalised Fontserè's project, which had been left half finished, and used the Park as the venue for the Exhibition and the Exhibition as a showcase for *modernista* architecture.

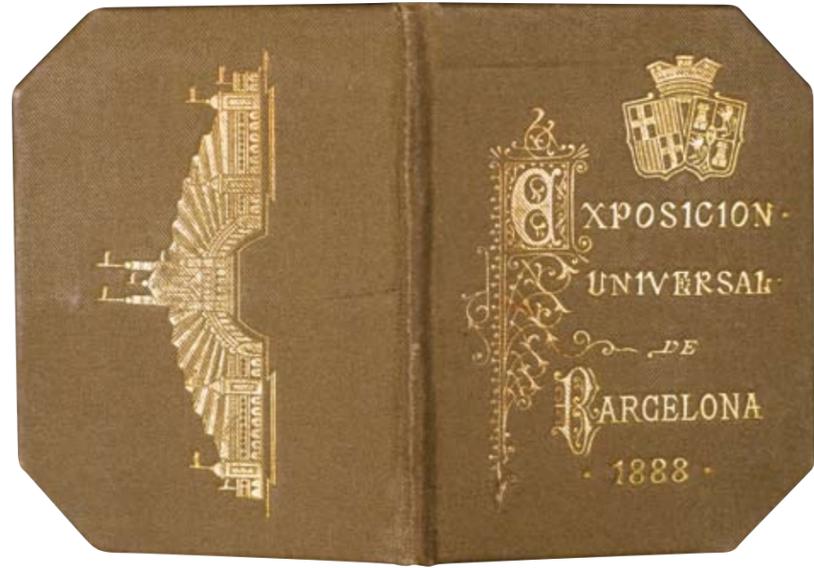
“Hemos seguido paso a paso las diversas vicisitudes del gran certamen. Hemos visto levantarse por ensalmo los edificios de la Exposición y transformarse y embellecerse de improviso la ciudad con notables mejoras, cuya realización hubiera costado años enteros de lucha. Debíose aquel primer triunfo, uno de los más grandes, a un pueblo de constructores, artesanos y artistas cuya actividad y acierto pasmaron (sin metáfora) a hombres que se hallan avezados a la vertiginosa rapidez con que levantan sus construcciones los pueblos modernos. Nos convencimos, por fin, tras el temor del principio o a la oposición antipatriótica, de la verdad del proverbio querer es poder.” \*

J. Ixart, *El año pasado. Letras y artes en Barcelona*, Barcelona, 1889

\* “We have followed step by step the many vicissitudes of the great event. We have seen the buildings of the Exhibition rise as if by magic and the city transformed and embellished with notable improvements, whose execution would have taken whole years of struggle. That first triumph, one of the greatest, was owed to a city of builders, craftsmen and artists whose activity and skill stunned (with no metaphor) men who are seasoned to the dizzying speed with which modern peoples erect their buildings. We have at last convinced ourselves after the fear of the beginning or the antipatriotic opposition of the truth of the proverb where there's a will there's a way”.



Exhibition key, 1888, MUHBA

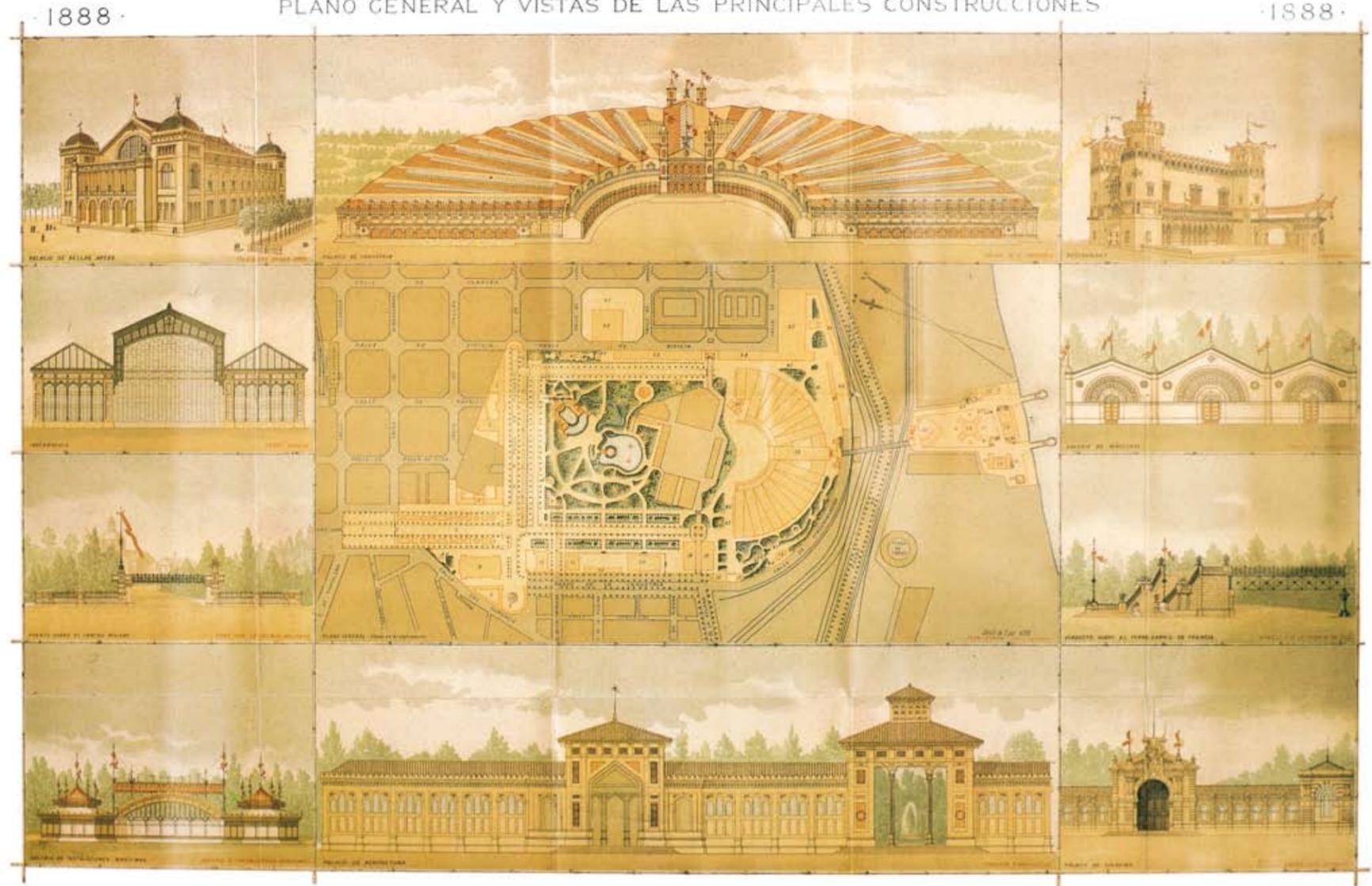


Season ticket for the Exhibition, 1888, MUHBA



# EXPOSICIÓN UNIVERSAL DE BARCELONA

PLANO GENERAL Y VISTAS DE LAS PRINCIPALES CONSTRUCCIONES



General plan of the 1888 Exhibition, AHCB

### The incorporation of the towns

The guidelines drafted back in 1855 for the town planning competition included proposals for the merger of Barcelona with the eight surrounding towns. The incorporation of the outlying settlements was also a feature of the Cerdà Plan, used by the council to try to legalise the municipal overhaul.

In 1876, former mayor Rius i Taulet submitted to Parliament an amendment to the municipal law that authorised the government to decree the addition. The combined opposition of the towns and the conservative party blocked progress for a considerable time; attempts at negotiation – the alternative fostered by Rius i Taulet when he returned as mayor in 1881 after a spell as a member of parliament – met limited success.

In 1891, after Rius i Taulet had died, the council called once again for the decree of incorporation, but did not obtain it until 1897, when it was finally granted, in exchange for payment of an extraordinary war contribution.

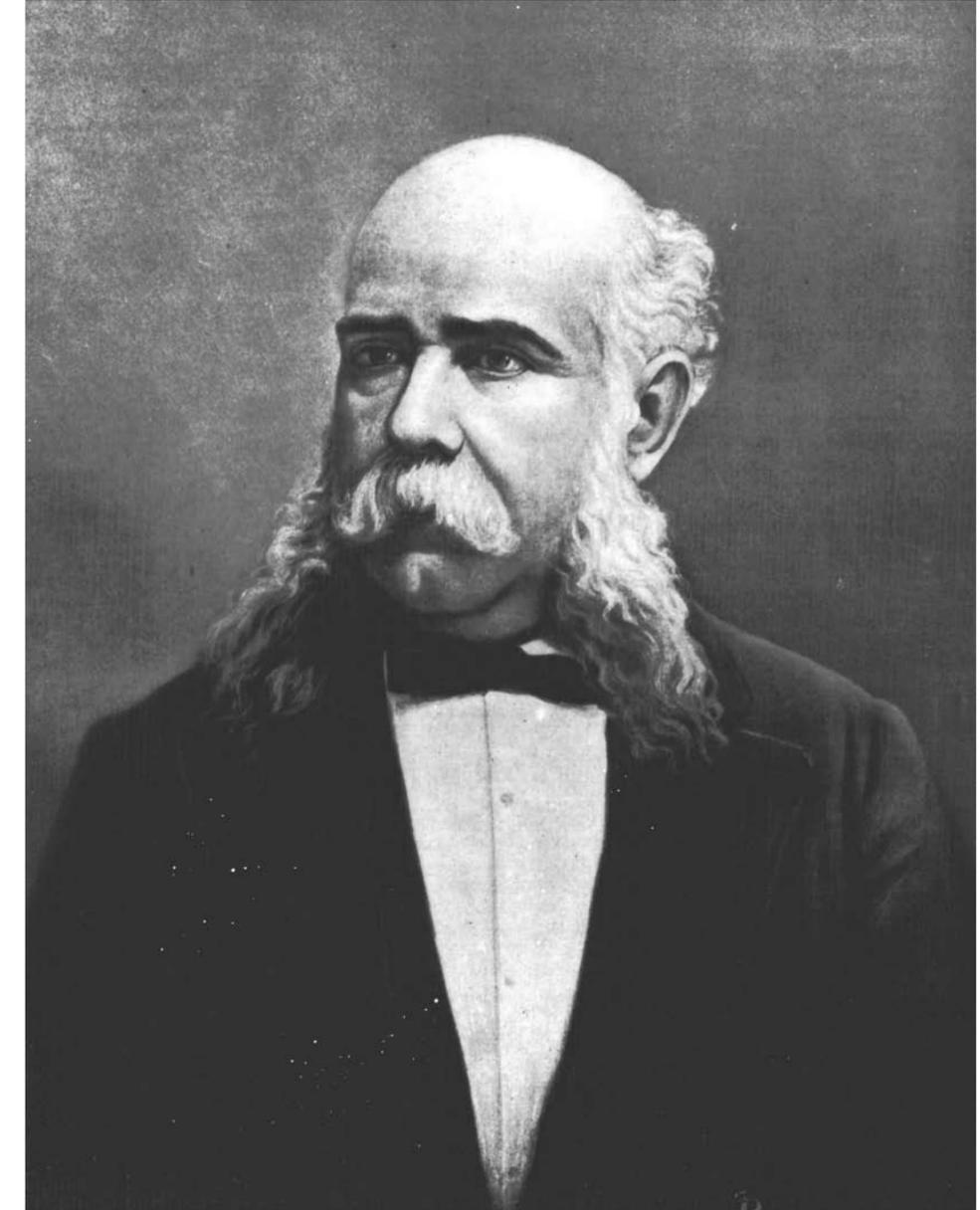
“La otra ventaja que el Sr. Rius esperaba de la agregación consistía en la exacta, hermosa y apropiada ejecución del plano de Ensanche, que únicamente podrá obtenerse mientras permanezcan sujetas a una sola dirección y fiscalización todas las edificaciones que se proyectan y ejecutan en la extensa zona que comprende la que ha de ser nueva ciudad y sin rival por cierto, no ya entre las españolas, sino quizá entre las de Europa, donde el ensanche de Viena tan sólo puede hacer competencia a lo que sería el de Barcelona, si puntualmente se ejecutasen los planos del ilustre barcelonés Sr. Cerdà.” \*

\* “The other advantage Sr. Rius hoped for from the addition consisted of the exact, beautiful and appropriate execution of the Extension plan, which can only be obtained as long as a single direction and taxation apply to all the buildings planned and erected in the large zone that takes in what will be the new city, indeed without a rival, not just among Spanish cities, but among those of Europe, where only the Vienna extension can compete with what the Barcelona one would be, if the plans of the illustrious citizen Sr. Cerdà were executed”.

Sans Council, Report of the members of the municipal committee for the negotiation with the mayor of Barcelona, Francesc de Paula Rius i Taulet, advising him to demand the addition to Barcelona, February 1883



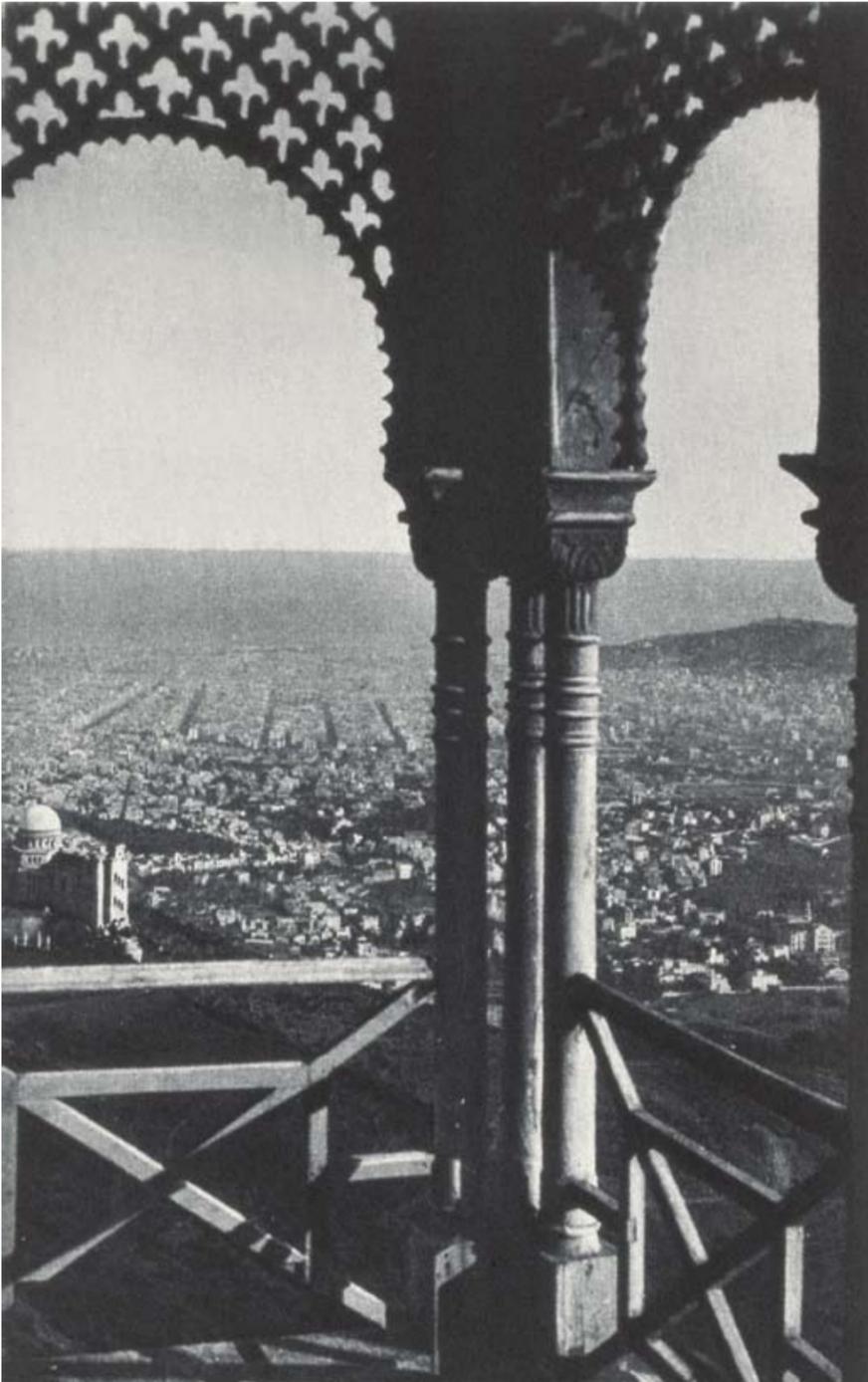
Unknown author. Ildefons Cerdà



Pahisa. Francesc de Paula Rius i Taulet



Plan of Barcelona and the surrounding towns approved by the council in 1891 demanding the addition decree, AHBC



View of Barcelona from Tibidabo at the beginning of the 20th century. Queen's Pavilion, built in 1888, AFB

## Barcelona, visions of the first metropolis

Teresa Navas

The discursive thread of the exhibition covered by this catalogue runs through the forty years which saw Barcelona transformed into a metropolis. The story begins some time before, but its first milestone is the approval of the 1859 extension plan. The period would later culminate with the incorporation of townships within the capital in 1897. Many other European cities underwent a similar modernisation process. Common elements stand out that point to the emergence of a specifically urban, contemporary culture in 19th-century Europe. But despite those shared aspects, each city has its unique story, a way of approaching and characterising the metropolitan dimension. Barcelona is no different; it has its own complex tale which can be traced from a range of disciplinary perspectives. Of these, the field of photography provides an invaluable glimpse of a city's progression.

A metropolis needs to be visualised. It must be made visible for its citizens and for outsiders, since the way it projects itself tells us much about its level of urban development. First of all, it must present the evidence, the physical growth that results from being a focal point of economic interest within an important region. The Barcelona of our period met that first condition very well; it was a regional centre that absorbed practically all the migratory movement within Catalonia. This economic influence was not just confined to the capital, however; the surrounding towns and villages would gradually merge with the city to form an urban agglomeration that functioned as a single organism. In the second half of the 19th century, the unique position of Barcelona was reflected in the rapid acceleration of these processes and the consequent growth of its influence, not only within Spain but within the Mediterranean region as a whole.

Photography has been one of the most useful historical sources in capturing the expansion of the first metropolises, as they grew from compact cities that could be crossed on foot to sprawling urban phenomena which necessitated the development of intercity transport networks. In Barcelona, the panoramic shots taken from Montjuïc, from the Columbus Monument and from Tibidabo allow us to appreciate the heterogeneous nature of the conurbation. However, as the panoramic images broadened to take in the city's growth, one's attention is drawn more to the periphery than to the centre, and more to the working-class and industrial neighbourhoods than to the middle-class residential districts.

One of the features of metropolises is the construction of an intelligible portrait of their most representative places, from the historical monuments to the newly built urban developments.<sup>1</sup> This is where the true character of the big cities comes into play. The intrinsic personality of each is reflected in its capacity to absorb activities of different orders, derived primarily from their administrative, political and cultural influence.<sup>2</sup> Barcelona was not to be a capital of political influence and suffered as a consequence of its lack of autonomy in town planning matters and the difficulties it faced in launching both the functions of the modern city and the political representation that it called for. The city was acutely aware that its modernisation would depend on the progress of its town planning ventures. For that reason, the field of culture was so closely associated with the most ambitious public urban development projects. Capital would also play an instrumental role, as it did in bringing the university back to the city, in developing new public museums and large green spaces in the city. And it would use the occasion of the Universal Exhibition to meet all those challenges. As had happened with other leading European cities of the time, the forces of cosmopolitanism would begin to gather momentum after this great event and would become increasingly important with the emergence of a new architectural style and the growing identification of monuments as metropolitan symbols.

The confluence of all these elements would pave the way for the emergence of a Barcelona urban culture. But as with all urban cultures, what would count the most was the metropolitan experience, the constant mutation,<sup>3</sup> where the appearance of modernity would become the most salient feature of a vast urban landscape mass-producing contemporary culture.

### Panorama of a changing city

Barcelona was at first slow to embrace photography. At first, the city featured rarely in photographic albums or lithograph views, both a growing craze at the time that enabled viewers to travel the globe by gazing at the illustrations. But the early development of photography as a new means of capturing reality – the announcement of its invention dates from 1839 – coincided with the development of the first European and American metropolises, and Barcelona was not left far behind. It is not by chance that the first modern photographs of the city appeared at the same time as the early stages of the extension programme.

It was foreign photographers who provided the first views of the city. Queen Isabel's state visit to the city to inaugurate the extension in 1860 attracted a number of professional photographers, including the Englishman Charles Clifford. To reveal the full extent of the city, Clifford chose – as had official engravers and artists since the 16th century – the vantage point



Charles Clifford. View of Barcelona from Montjuïc, 1860, AFB

offered by Montjuïc. From there he captured an urban landscape on the verge of transformation. The demolition of large sections of the defensive walls caught in the image suggests a city preparing to burst its bounds and conquer the territory of the Barcelona plain. The royal presence served to officially sanction this change in physical boundaries and would prove to be a defining moment in the creation of the metropolis.

Clifford's 1860 panoramic view shows a compact city, alongside its harbour. Ten years later, another photographer, Juan Laurent, set out to capture with his camera the cities and monuments of Spain and, like Clifford, he chose Montjuïc as his viewpoint. By 1880 Laurent would repeat the image. The need to update it was quite clear, at a time when the extensive construction of buildings and streets had signalled a definitive break with the past. The image testifies to the gradual disappearance of the city's traditional boundaries. From the viewpoint chosen, the foreground is occupied by the new Poble-sec district and the townships of Hostafrancs and Sants, which were beginning to coalesce, filling in the fields and empty spaces between them. The panorama shot in 1880 shows us the hinterland of Collserola; indeed, the interest is no longer the port city, but the territory above the plain which is taking on the appearance of a modern conurbation.

### The first age of the extension

As we have said, local photographers were the first to eye up the new city, its avenues, its squares – of which there were still very few –, and its first buildings. The possibilities offered by photography to reveal reality without intermediaries were exploited by Joan Martí, the first photographer to open a shop on the high street. Martí's camera caught the development of the extension

closest to the existing city, where an undeveloped Plaça de Catalunya vied with an unsurfaced Gran Via, whose line of trees was the suggestion of its future role as one of the city's most important boulevards. The images attest to the state of this recently conquered, somewhat inhospitable space, where the building work alone defines the first stages of the extension.

The exception, in a way, was Passeig de Gràcia. Despite the generally slow pace of the building work in the 1860s, there was a surprising concentration of houses on what would be the extension's most emblematic thoroughfare. Amidst the fast-growing development, confirmed by the arrival of the first tram line, many of the property owners of the road-avenue that led to Gràcia had begun to build a number of low density single-family garden residences. The alternative to these models of houses was the low-rise multi-family housing, which was grabbing up some of the best chamfered corners. The mansions of the well-to-do classes, among the first to sprout during the first years of the extension, set the style and tone for many of the buildings to come. However, the mansions did not last long: they were quickly replaced with blocks of apartments which offered far higher economic returns from the urban land.

Xavier Tafunell's study of the housing industry<sup>4</sup> shows us how the first cycle of development stretches out over the territory closest to the old city, especially on the so-called *Dreta del Eixample* (right-hand side of the extension). The foundations are laid for this new space, soon to become the commercial and middle-class centre of Barcelona.<sup>5</sup>

The widely praised architectural quality of the mansions of the period was documented in Javier Álvarez's photo album, published in 1872. Here the interest is not in a city still taking shape, but in the houses of the well-

to-do families which had adopted a variety of styles, from classical repertory to oriental. Unusually for that time, many of the photographs were close-ups which offer the minutest of details, enabling the viewer to really appreciate the building's artistic value.

The extension was the undisputed arena of private enterprise, which undertook to lead the construction of the modern city – a process which was inversely proportional to the failure of public investment. Given that state of affairs, the university building, begun in 1863, may be regarded as a true metropolitan landmark, the first major public facility of monumental character to result from a well-coordinated development programme promoted by the city.

### The symbolic construction of a capital

In 1871 the council published the rules for the open-tender competition for the Ciutadella Park project. The complexity of the architectural programme reflected the high expectations placed in a space that had finally become the property of the city in the wake of the revolutionary political change of 1868. While in the early 1860s attention had focused on freeing up the military citadel to expand the functional capacity of the port of Barcelona – in 1863 Cerdà designed a logistical transport platform for the new site –, later priority was given to the construction of a park that would embody the cultural, civic and progressive values of the modern city. This is the other side of the constitution of a great city: its symbolic construction.

In the 1870s and 1880s Barcelona council launched a policy clearly aimed at strengthening Barcelona's image as a capital. Here the main driving force was the mayor Rius i Taulet and his belief in the strategic role of culture and civic values in defining the city, which, at least from an economic point of view, had already affirmed its hegemony inside Spain.<sup>6</sup> For that reason, the Universal Exhibition of 1888 was so important: it served as a platform to show Barcelona's ascendancy as a metropolis, on a par with the continent's other leading cities.

Perhaps these sentiments are best epitomized by a sketch published in 1882 by Antonio Casteluchó. In the foreground of the sketch is the same park project which had won the competition ten years earlier, with all its core elements: the gardens and avenues, the buildings designed for museums, the exhibition hall, etc. Casteluchó set the project within the growing city, as part of the model of the extension plan. The image is a lithograph plate designed to promote a transformed city, which the author closely identifies with the exhibition's spaces and buildings, many of which were still unfinished or even at the project stage, as was the case with the main exhibition hall in the centre of the park. The image, which highlights the most monumental aspect of the city, the new park, is nonetheless inseparably linked to the city's unrestricted

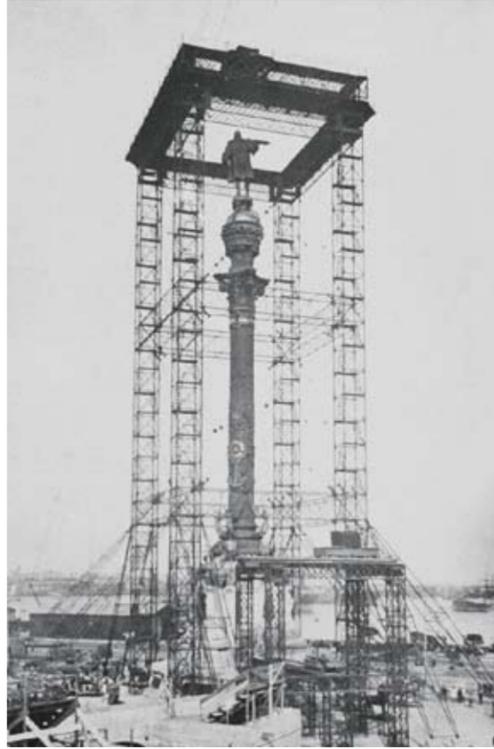


Unknown author. Arnús house, the chamfered corner of Passeig de Gràcia and Carrer Mallorca, BNE

expansion across the whole plain. It also highlights the idea of La Ciutadella as the only park in Barcelona.

Despite the difficulties encountered in developing the new park, the programme to embellish the "visible city" became yet more ambitious and reached as far as the new seafront with the opening of Passeig de Colom. The council provided numerous sculptures and statues for La Ciutadella and other parts of the new city, and introduced pavements, street furniture and public lighting along the main city thoroughfares. It was a public programme aimed primarily at supporting the Exhibition, but which nonetheless was accompanied by significant private investment in the extension and the surrounding towns as well as in the development of urban and transport networks in various parts of the metropolitan territory.<sup>7</sup>

At all events, the impact of the exhibition was sharply focused on Ciutadella Park, where the exhibition buildings – some temporary and others major public works – were being erected. Their function as museums is noteworthy, as they defined the new cultural character of the public space, while also addressing a long-standing deficit in the city. Most remarkable are the examples of the architecture, which pointed to the attainment of a new style which would develop from that time and conveyed the image of a well-to-do middle class, with cosmopolitan aspirations.<sup>8</sup>



Columbus Monument, inaugurated in October 1888, AFB

The Universal Exhibition also provided an opportunity to display the first photographic images of Barcelona. The exhibition was featured in an official report written by the photographer Pau Audouard, who provided detailed descriptions of the images on show.

### The sounds of the city

Aside from the ceremonious tone of the many official events that took place there, the Universal Exhibition was an event that galvanised the life of the city, a great visual spectacle<sup>9</sup> that not only invaded the exhibition precinct but stretched out to other points of the city. The organizers took advantage of the opportunity to stage public events at some of the city's most auspicious venues – top of the list being Plaça Catalunya – as well as at some new purpose-built locations.

Meanwhile, the renovations of the port heralded the beginning of a new relationship with the sea. The main aim was to create an industrial port, but with a recreational dimension, and in October 1888 the Columbus Monument was inaugurated. The erection of the monument and the construction of Porta de la Pau were the final touches to the project to open up Passeig de Colom. The public's adoption of the monument was enduring: it became the supreme Barcelona icon, the most recognisable urban symbol of the metropolis; even more popular than the waterfall in Ciutadella Park. At the same time it provided a new vantage point for the city, offering the double perspective of the steady course of the Rambla on the one side and the seafront and harbour area on the other. From the top of the monument, visitors could look down on the centre's bustling streets as well as out across a city of already substantial dimensions stretching unstopably across the territory. A similar view was offered by the balloon anchored alongside the exhibition's Palace of Fine Arts. It was one of the most unusual attractions of the fair, enabling the public to ascend up to 300 metres above sea level.

The panorama of Barcelona offered from the Columbus Monument was captured and commercially exploited by the city's photographers. The 1880s had seen a leap forward in the professionalisation of photography in Barcelona, thanks in large part to the emergence of a number of studios engaged in surveying the city spaces. Outstanding in the field were the Esplugas Puig brothers – Antoni and Josep –, who published catalogues and albums, in addition to compiling large collections of city views for sale to the public. Their representation of the city is markedly different from that of the pioneer photographers of the seventies. The sheer number of images now taken was one difference, but most importantly, the photographers now had a chance to depict the atmosphere of the street, the hustle and bustle that filled the Rambla and stretched out across the lower part of the extension. The Esplugas captured the spaces that served as centres of public attraction and their images added to the city's expectations of modernity.

If the Rambla had become the avenue *par excellence*, lined with urban furniture, kiosks and fountains, Plaça de Catalunya lived up to its unofficial title, "esplanade of the north"; it was, in essence, an empty space between the old and the modern cities. The vicissitudes and indecisions regarding its future as a public space, with private buildings gradually crowding its edges, made it an ideal leisure spot and it was heavily used during the Universal Exhibition. The empty ground of the square became a battle ground between competing cafés such as La Pajarera, El Circo Ecuestre, the circular Waterloo Panorama building – with its portraits of Wellington and Napoleon – and Les Paperines, which housed, among other things, bird collections and fantastic landscapes. All these ephemeral constructions lent the place a lively

atmosphere which would fade in the mid 1890s, when the decision was made to turn the square into an urban centre for the whole city.

### The deployment of the city. Centre and periphery

A man who was most likely a resident of the extension photographed the accelerating construction from his balcony in the 1880s. His is a direct, spontaneous photographic record whose only aim was to capture the changing reality before his eyes. The images show us the buildings gradually filling up the Plaça de Letamendi zone, the train running along Carrer de Balmes, and the transformation of the Barcelona plain into streets and city blocks on the corner of València and Enric Granados. It is one of the few graphic testimonies we have of that thrilling metamorphosis.<sup>10</sup>

The result of the notable increase in building activity that began in the 1870s was an increasingly consolidated extension. That is supported by the images we have of that part of the city, whose growth seemed to suggest that it was vying to keep up with the expansion of the other towns of the plain, whose populations were multiplying at double the rate of Barcelona's. Everyone had to wait until the end of the century to glimpse images of the towns that had been added to Barcelona and which increased the city's surface area more than fourfold. Meanwhile, a spontaneous portrait collage of the extension was produced through the constant photographing of the buildings of religious institutions; some associated with teaching; others cut off from the historic city but still playing their part as landmark architecture in an area where the urban continuum was ensured by the intensive building of private residences. Alongside those new monuments the main thoroughfares stand out: Carrer de Pelai and Carrer de Balmes, the gardens recently laid out in Plaça de la Universitat and, perhaps most significantly, the development since 1886 of Gran Via as far as Plaça d'Espanya, and Carrer d'Aragó, with its overland railway (put underground in 1882).

There is no doubt that the thoroughfare that attracted most interest and raised most expectations was Rambla de Catalunya, which was developed in 1887. The channelling of the Malla stream made it possible to develop a graceful tree-lined avenue that chimed perfectly with the middle-class tone of the central extension. During its development the owners of the land contributed generously – with buildings of notable architectural pedigree –, as did the municipal authorities, embellishing the avenue with public statues in the style of other European cities – by no means usual in the Barcelona of that time. Rambla de Catalunya became an uptown thoroughfare which contrasted sharply with the festive trade fair atmosphere that was still prevalent in Plaça de Catalunya in the late eighties.



Josep Esplugas Puig. La Rambla de les Flors, 1880s, AFB



Barcelona a la vista. Plaça de Catalunya in the early 20th century

Lastly, the big question – of whether the extension was now part of the city centre – was resolved by two processes of quite different kinds, though each of them, in their own way, was an inseparable part of the development of the metropolis. The first was the incorporation of the townships of the plain to Barcelona in 1897, which had significant implications for the image of the city, as we shall see in a moment. Second was the issue of the role of Plaça de Catalunya, which many saw as the heart of the modern city, the city's main meeting point and a place of bustling movement.<sup>11</sup> It was not by chance that the first bus and tram networks had turned the square into a nexus for the public transport lines. The new development of the square can be glimpsed in 1902, with its simple garden option, electric lighting and two diagonal thoroughfares. But transport connections alone were not enough to consolidate the square's role as the city's new centre. That function would be performed by the conversion of Cafè Colom into the Hotel Colom in 1902, which helped bring middle-class and cosmopolitan values to the square.

#### Panorama of the first metropolis

At the end of the 19th century, Passeig de Gràcia could fairly claim to be the main thoroughfare of the extension. Its generous layout made room enough for all kinds of traffic, from the tramway to wheeled vehicles and the pedestrians that walked the pavements. The avenue had become the location of choice for the Barcelona middle classes to stroll, to see and be seen. Trade there was strong and bars and restaurants proliferated. The period also saw the first shoots of the *modernista* architecture that within a few years would define the cityscape, as the photographs of the street bear faithful witness to.

Passeig de Gràcia also continued to be the main thoroughfare linking Barcelona and Gràcia, and, along Carrer Gran, from Plaça de Lesseps, it gave access to Vallcarca, Putxet, Sarrià and Sant Gervasi; in other words, the many districts and towns that now formed part of a consistent unbroken whole stretching from the harbour to Avinguda del Tibidabo. No doubt the main sensation the citizen had as he travelled that route was one of urban continuity, just as he would have travelling toward Hostafrancs and Sants or the Poblenou area. Despite the empty spaces and the marginal development zones, the addition of the townships to Barcelona in 1897 had merely consolidated the processes that had been shaping the city over the second half of the 19th century. And so the addition of the townships was the objective and indispensable requisite for confirming Barcelona's identity as a metropolis in its own right, endorsed by a population of 500,000 inhabitants.

The growth of the towns of the Barcelona plain – now districts of the city – had been a consequence of the sheer force of attraction exuded by the capital as a regional centre from the 1850s. Catalan migration to the

Barcelona area from the fifties had crucial repercussions on the demography of the townships, which until then had enjoyed modest growth but which quickly became among the most densely populated settlements in the country; for example, Gràcia and Sant Martí de Provençals were the second and third largest towns in Catalonia.<sup>12</sup> And this conditioned not only their growth but also their character. The atmosphere of the garden houses in Vallcarca and the summer residences in Sarrià, for example, contrasted sharply with the markedly industrial tone of Sant Martí, Sants, or the craftsman feel of Gràcia. Furthermore, the turn-of-the-century city grew in complexity as essential large-scale facilities were added, such as the Model Prison or the slaughterhouse which, while serving the whole city, were predominantly located on the outskirts where there was ample free space.

It is significant that this period witnessed a growing interest among the population in the large photograph albums that captured the city's changing face. In arguably the most emblematic of these, *Barcelona a la vista* – published in two parts between 1896 and 1897 and 1904 and 1905 –, one could glimpse for the first time a rationally planned city, with numerous centres and indefinite boundaries which reached as far as the two rivers. Over the next decades and much of the 20th century the conurbation would gradually be consolidated.

To enjoy an overview of the city, the new viewpoint was Tibidabo. The first attempts to conquer the summit were made in the wake of the Universal Exhibition in 1888, but several years would pass before it became a popular attraction for the people of the city and visitors. The breathtaking panorama from the mountain gives us a clear idea of the real size of the new Barcelona, and its future possibilities.

#### Epilogue: the tourist portrait of Barcelona

Lastly, a big city must know how to publicise itself, to make itself known to fulfil one of the main functions of modernity: to draw visitors. Barcelona had never been a tourist destination; its reputation was more that of an industrial and commercial centre than an interesting enclave for the rich travellers who embarked on the famous “European tour”, taking in the major European cities and tourist resorts. But now that the 20th century was under way, the city tried to enter the circuit and, with that in mind, created a special municipal service aimed at spreading the city's reputation across the world.

At the same time, the city had to know how to package itself, to create, or rather to select, identifiable urban icons that represent the whole. The Columbus Monument, first, and later La Sagrada Família took on the role as universal symbols, and they helped market Barcelona as one of the world's major tourist cities.

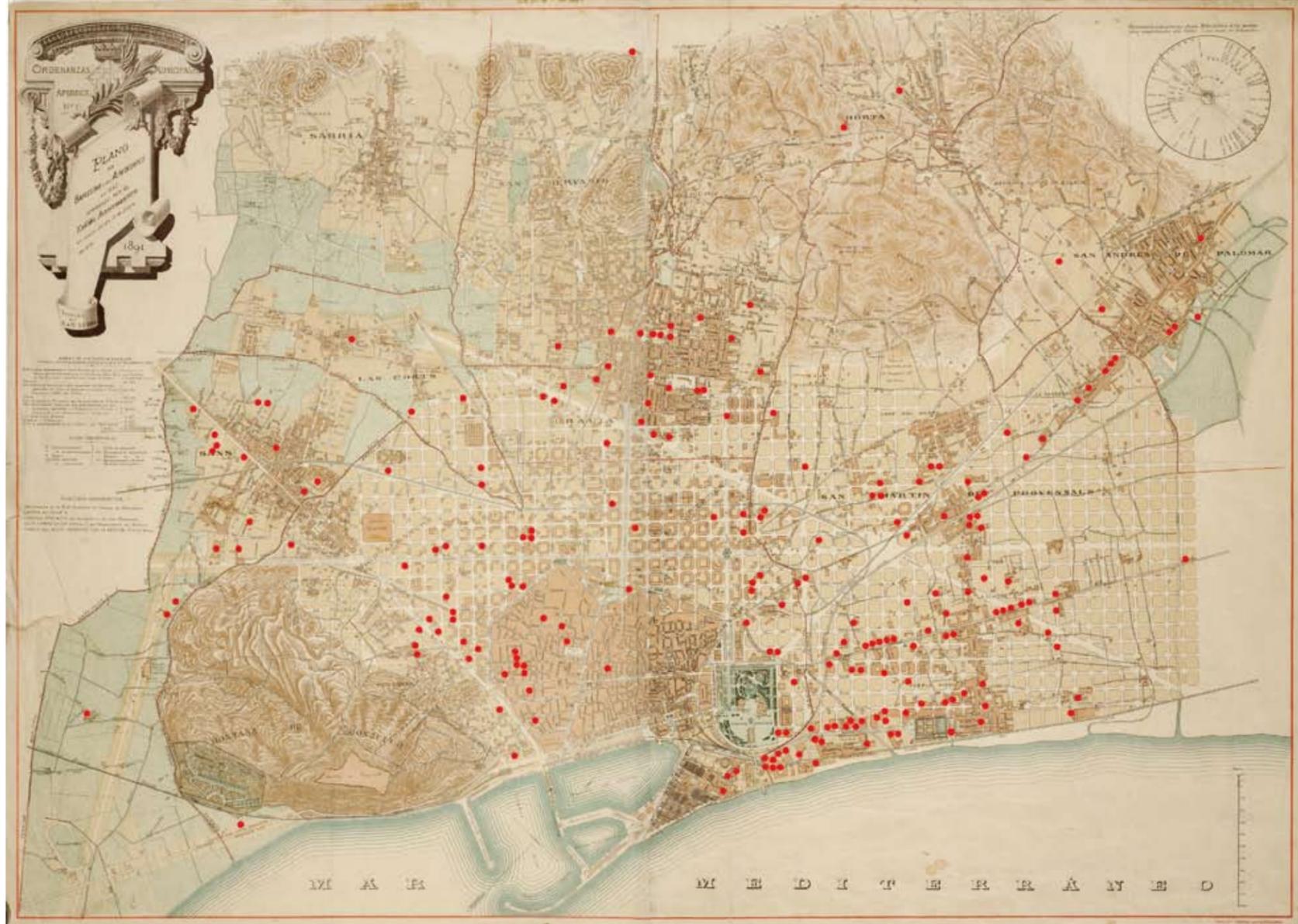
At the time there was the growing publication of collections of images of the city's most representative monuments and sights, which were the first example of (relatively) mass-produced souvenirs aimed at providing an enduring and evocative reminder of the city for tourists. This function was later more successfully fulfilled by the widespread publication of city guides and, most notably, postcards from the end of the 19th century. In the case of Barcelona, the best selections of postcards were commercialised by the firm Hauser & Menet, which provided a pictorial treatment of the image that was cropped so as not to occupy the whole surface of the back of the postcard. The serial mass production of the postcard made it the most effective vehicle in the communication and discovery of the urban image, its democratisation and, in turn, the mass development of aesthetic pleasure in the views of the first metropolises.

#### NOTES

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11. “Centre of movement” is the category expressed in the *Guia de Barcelona* by Modesto Martí in 1888. Quoted in GARCIA ESPUCHE, *El Quadrat d'Or...*
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Hauser & Menet. *Souvenir of Barcelona*, late 19th century, AFB



Location of the main industries of Greater Barcelona in 1906, from the industrial registration data, according to Mercè Tatjer, Lluís M. Bou and Francesc Caballé

## Industry in Barcelona in 1906 and the structuring of a first metropolitan space

Mercè Tatjer

The expansion of the industrial space in Barcelona had begun long before the Cerdà Plan and the extension. In the second half of the 19th century, the cartography of the military engineers, and more specifically the map drawn up by Ildefons Cerdà, show the existence of small but numerous manufacturing installations outside the walls. Those within the boundaries of Barcelona are better known, both because they were controlled by military engineers who were in charge of everything built within the so-called '*Zona Polèmica*' of the city of Barcelona, and because they have been the subject of some research. Mostly they were fields for drying the calico produced in the delta areas with small spaces all around for manufacturing chemical products, matches, hemp and jute ropes, and even the occasional flour mill or brick kiln. Beyond the '*Zona Polèmica*', where no permanent buildings could be erected, some businessmen began to look for spaces to enlarge their premises due to the congestion of the walled city and the prohibition on installing new steam factories or extending existing ones. A combination of manufacturing traditions, good connections with the port and the flat land and sources of water for production processes were some of the key factors in determining the location of the new installations built outside the walls just at or beyond the limit of the 1500 rods from the '*Zona Polèmica*'.

After the demolition of the walls, and once the land within the boundaries of Barcelona had been freed, the urban development set out in Cerdà's plan began in earnest. Soon many factories had located there, especially in places near the port or in the traditional industrial areas of the Raval and the Sant Pere districts.<sup>1</sup> By the end of the 19th century, just before the addition of the townships, the enlargement of the industrial space had become an indisputable fact.<sup>2</sup> To meet the expectations of urban development and the resultant population growth, the transport, communications (telephone and telegraph) and supply networks spread over the territory and helped to create a new metropolitan space. A number of plans in the exhibition have shown the expansion of the different supply and service networks. The gas company networks, for example, can be seen to spread out over the new city to meet growing private demand and provide for the installation of public lighting. The sewage and water networks, closely interdependent, would soon help transform the sanitary habits of the people of the city and improve public

health and quality of life, while also fostering further development. The plans also show the proliferation of transport networks, especially the trams, which linked the different townships of the plan with Barcelona – and the railways which, running out further, connected the city with the hinterland and with Europe.

### Industry in the new metropolitan territory in the early 20th century

The map of 1901, on which we have located the companies that were paying more than 1,000 pesetas in 1906, shows the results of the expansion process of the industrial space throughout the territory of Greater Barcelona and enables us to trace the development of the metropolitanisation of industry.<sup>3</sup> By 1906 industry had occupied many spaces in the new territory that had emerged from the addition. The new Barcelona was already an industrial metropolis.

Within the old boundaries of Barcelona, in 1906 we find a total of 54 companies, 15 of which were located in the Raval. The productive activities of that district were kept up thanks to the continuity of the first companies, the creation of new ones (A. Carné workshops in Carrer de Ponent and printing houses like F. Cabanach and L. Tasso) and the segmented reuse of old factory premises with a substitution of activities (Carrer de la Riereta, 19-21, 24 or 35, Carrer de l'Arc del Teatre). Nor must we forget the offices and warehouses of the companies that had moved their productive activity outside Barcelona.

After the Raval, the highest concentration of activity was in La Barceloneta (e.g. La Maquinista Terrestre y Marítima, La Societat Catalana de Gas or Alexander Germans).

In the part of the extension corresponding to the original municipal boundaries, the companies that had been there for years were joined by many others, some of which even occupied central locations (the publishers Montaner i Simón and Thomas are a good example). This was particularly the case in the extension around Sant Antoni, which had been consolidated as a large manufacturing area with a series of mechanical construction companies (Germans Valls) and where the first Hispano Suiza car factory in Barcelona had located. There was also a major presence of the food and drinks sector (Xocolates Juncosa), not to mention companies such as the Petri-Moritz and Cammany i Cia. breweries, the Lligué i Cia. glass firm, and a number of textile manufacturers (Romeu i Bonastre).

On the left side of the Eixample there were several noteworthy companies, including Damm, another large Barcelona brewery, and the Orsola, Solà i Cia. hydraulic mosaics firm. Just as with the textile firms (Oller y Niqui, Fills de F. Sants) and the innovatory Muntadas electricity factory (Indústria Elèctrica), they were located along the strip of Carrer de la Diputació between Carrer d'Aribau and Carrer de Calàbria.

Lastly, in the Fort Pienc districts and the upper part of the Eixample, beyond Passeig de Sant Joan, near Sant Martí, there were also a large number of factories. Lace was produced at Casimir Volart, candles at D. Mata i Cia, fabrics at J. Vila, and the Anuario de la Exportación printing workshop was also located within the district.

Poble-sec and Hostafrancs, the historic Barcelona districts outside the walls, had also become manufacturing centres. In Hostafrancs, good examples included the landmark Florensa (known as La Porcellana), while in Poble-sec, the largest operations included La Barcelonesa de Electricidad and the large Butsems firm, as well as four companies in the building-materials and clothing sectors.

Needless to say, the old municipality of Barcelona held on to its dominance of industry, thanks largely to the presence of the energy companies and the mechanical metallurgical industries concentrated in La Barceloneta. In their research J. Nadal and X. Tafunell also note that fact and point to a slight increase in manufacturing within the area. The data for the big companies in 1906 confirm that increase and point to the existence of small but innovative industries in the electricity, drinks, graphic-arts (printers and publishers), clothing, footwear and home-furnishing sectors.

The first factories in the old quarters of the towns of the plan, especially Sant Martí, Sants and Gràcia, were joined by new ones, most of which were already-established operations in Barcelona that had either moved there or opened in new premises. The 1906 map suggests that Sant Martí had clearly become the leading industrial area of the new city, housing 109 (50% of the total) of the factories paying more than 1,000 pesetas in tax. At that time Sant Martí could be considered not only one of the industrial powerhouses of Barcelona, but also a true industrial district in and of itself. It had its own technical training centres, such as the School of Arts and Trades, founded by the council in 1886, and an extensive network of social and cultural amenities and centres.

However, given its size, it had a very uneven distribution of activities, since the greatest density of factories was in the Plata-Trullàs district – marked out by the line of Avinguda d'Ícaria (Passeig del Cementiri) and the streets of the Eixample that ran parallel and perpendicular to it, up to just above Pere IV. Here flour mills shared the space with a cluster of distilleries and textile and metallurgical industries (Rivière).

Another important manufacturing centre in Sant Martí was that located between El Clot and Camp de l'Arpa, which housed Martí Riu's textile factory. And a third key area was around the old centre of Poblenou, which stretched out along the historical axial thoroughfares of Carrer del Joncar and Carrer del Taulat as far as the Girona Brothers foundry (Material para Ferrocarriles y Construcciones).

Within Sant Martí, Carrer de Pere IV was an industrial axis which, together with Carrer de Marià Aguiló and the old Carrer de Valencia, linked many of the large industrial clusters of Poblenou. Nearby were the large textile factories such as Can Ricart, Can Casas, Lucena, Vila, Martí Llopart, and those of other sectors such as the rubber manufacturers Klein i Cia., mechanical companies (Pfeiffer, Jacas, Martí i Cia.) and food manufacturers (Galetes Viñas).

Another major axis was that which connected Barcelona and Sant Andreu along Carretera de Ribes via Carrer del Clot and Carrer de la Sagrera. The highest density along these roads was in Sagrera, which stood at the crossroads with the new Horta road served by the Tramvia de Foc, the first inter-city steam tram. The industry there included flour mills (Figueras, Sagrera i Cia.) and textile or adobe factories.

Gràcia, with a total of 22 companies, was the city's third most important manufacturing centre. Most of the industries were located along its narrow 19th-century streets. These included producers of silk textiles (Batlló i Cia.) and elastic fabrics (Matas i Cia.), the manufacturers of printing characters, Successors de I. Neufville, and the keymakers E. Detouche. Of the neighbourhood's largest factories, only the Ramírez i Cia. printing workshops, Gas Lebón, the R. Almirall, Pattberg and J. Marco textile firms and the candlemakers R. Guasch were in the new streets of the Cerdà extension, whilst F. Vilumara's silk factory was located on the as-yet-unfinished Avinguda Diagonal.

In Sants and Sant Andreu the distribution was more disperse, despite industry's tendency to concentrate in the old centres near roads and railways.

Sants had 16 factories paying more than 1,000 pesetas in tax returns, and some of these enjoyed a long-established tradition within their sectors, such as La España Industrial, arguably the leading textile company of Greater Barcelona with a total tax payment of 43,710.75 pesetas. The newest, Nebots de Joan Batlló, had been in operation since only 1880. Both of these companies were well ahead of the other large textile factories. Setting aside these textile companies, Sants had a diversified productive structure, with factories making soap (L. Bonnefoy, Alseda), glass (Juncosa), agricultural machinery and wine.

Little by little, areas of declining or limited industrial presence, such as La Marina de Sants – where the old La Auxiliar de la Industria complex was still unoccupied –, began to receive a fresh boost. Indeed, once the civil armoury had disappeared, the large mechanical and metallurgical company belonging to the Belgian engineer Wohlguemuth was installed. Also, the renowned engineer Josep A. Barret founded Construcciones Metálicas

Consolidadas, which was to enjoy a long history, while in the Can Tunis area F. Rivière established one of its two wire factories. At the same time, the Bertrand and Els Monteys factories continued to operate.

In 1906 Sant Andreu had only six factories with tax payments of above 1,000 pesetas. Four of these were textile manufacturers (Fabra i Coats, La Société Lanière, M. Puig, Ravella i Cia.) and the other two were the gas factory and J. Pascual's flour mill.<sup>4</sup>

In the old Les Corts district, a total of five factories were paying over the 1,000-peseta tax threshold. Of these, only the Companyia Anònima de Productes Químics, the successor to Llopis i Cia., could claim an enduring presence in the area. The other four were either new companies, established in brand-new premises in the old centre (the Deu i Cia. distillery) or the surroundings (Unión Corchetera), or companies that had moved to the Les Corts extension from the old city (the Damians foundry and the Font i Cia. perfume and soap factory).

The major areas with little or no industrial activity were the three townships in the upper part of Barcelona. In fact, neither Sarrià nor Horta had any important industry, although in Horta there were a number of tanneries, of which only the Can Fontanet factory, the property of Lasoli i Cia. at the time, paid over the 1,000-peseta tax threshold. In Sant Gervasi, meanwhile, the territorial contribution lists included only three companies: La Societat Anònima del Tibidabo, which operated a locksmith's workshop and an electricity factory, both at the service of the funicular; the Galetes Creus factory and the Fills de Gabriel Iborra textile factory.

### The Cerdà Eixample, industrial space

As we have seen, in the Eixample (extension) – both within the old boundaries of Barcelona and other areas inside the municipal boundaries of the added towns – the factories were soon aligned with the most central streets of the Cerdà plan. And so we find in Gràcia the Almirall textile factory, Pattberg, Guasch, F. Vilumara, and the graphic-arts company Henrich i Cia., the successor of N. Ramírez. Sant Martí and Les Corts followed the same process. In 1906, 88 of the 218 largest companies (just over 40% of the total number) were located in the area planned by Cerdà and laid out in his grid.

The spread of industry across the Eixample contributed enormously to the urban development and demographic growth of the area, with the factories at the very front line of this colonization. Indeed, in some cases the advancing factories were directly accompanied by the first working-class residential buildings, as was the case in Sant Antoni, the Gràcia Eixample and the area closest to Passeig de Sant Joan, which together made up the first industrial ring. In Poblenou, the same thing happened as in the La Plata district, where the



One of the oldest elastic-fabric factories in the Gràcia district



Workshop installed in the Raval in 1882, originally in the Sant Pere district

dwellings for workers built in the Cerdà weft around Carrer de Pujades soon followed the industries.<sup>5</sup>

Even many of the factories of the Eixample near Passeig de Gràcia could compete in surface area, installations and architectural presence with the largest in the whole of Barcelona. We are not only referring to La Batlló (located on four blocks) but also the Montaner i Simón, Thomas, Henrich and R. Almirall publishing companies, built in the 1880s on the Muntaner-Diagonal-Coello block (now Carrer Londres). In addition to these – relatively well known from images of the time –, we should mention the F. Camps fabrics factory, which since 1871 had occupied half a block at the crossroads of Carrer de Nàpols and Carrer Ausiàs March, housed in a notable neo-Gothic building. Other examples of large installations in the most central part of the Eixample are the Damians foundry in Carrer d'Urgell, Indústria Elèctrica in Carrer de Muntaner and F. Sans in Carrer de Casanova. Almost all of them occupied a large part of a city block.

### The fifty big factories

Furthermore, an analysis of the 50 biggest factories in Barcelona offers us a relatively different territorial and sector-by-sector picture. Territorially, we see once again the importance of the old township of Sant Martí – and especially the neighbourhood of Poblenou – as one of the main industrial areas of Barcelona. Of the 50 big companies of 1906, a total of 22 were located in Sant Martí. After Sant Martí comes Barcelona, with eleven

companies, four of which are the first on the list, whilst the rest are distributed, by order of importance, between Sants, Gràcia, Sant Andreu and Les Corts.

The six in Sants included four major, very well-known textile companies: La España Industrial, Batlló Germans, Valet i Vendrell and Serra i Arola, as well as a soap factory (Bonney) and a glass firm (Juncosa, Tarrida i González). The four big Gràcia factories, in addition to Gas Lebon, were the important Ramírez company, located in a grand building on the corner of Còrsega and Pau Claris; the Batlló i Cia. and Gironella silk factories, and the shared industries that occupied the old Puigmartí textile company installations in the street of the same name. Sant Andreu, although with only five of the 50 factories on the 1906 list, had three companies (Société Lanrière and Fabra i Coats, which we have already mentioned, and the F. Puig yarn firm) occupying high positions in the ranking, at 11th, 13th and 16th, respectively. The fourth (Societat Catalana de Gas, which formed part of the Barcelona firm of the same name) was in a lower position, and was followed further down the list by the J. Pascual flour mill and the Planella i Cia. dye factory. Les Corts was represented by two companies, Foneria Damians and the chemical products factory Companyia Anònima de Productes Químics, known as El Vidriol.<sup>6</sup>

Sectorally, the diversification of the productive fabric of the extended Barcelona can be seen quite clearly. The energy-producing companies particularly stand out, after winning large shares of the market to supply energy for factories, transport and public and household lighting. In first place are the gas companies, with their installations around La Barceloneta beach and La Mar Bella in Poblenou, as well as in Gràcia and Sant Andreu.<sup>7</sup> Trailing slightly behind are the two electrical power stations: La Barcelonesa de Electricidad, created in 1881, and La Central Catalana de Electricidad, established in 1897, both located within the old boundaries of Barcelona.

Then comes a group of companies which, though led by a textile firm, La España Industrial, and three others from the same sector and located in Sants – the large Nebots de Joan Batlló factory, Valet, Vendrell i Cia., and Serra i Arola –, also includes the Rocamora soap and stearin candle factory and La Maquinista Terrestre i Marítima.

The ranking also shows that the big textile companies of the moment were located in Sants and Sant Andreu, whilst their competitors in Sant Martí –with the exception of Sert in La Sagrera – seemed to be contracting. At the same time, in Poblenou, as in Greater Barcelona as a whole, new sectors occupied the leading positions. The food companies particularly stand out, as do the distilleries (Folch i Albiñana), flour mills (Figueras, Sagrera i Cia.), chemical producers (Rocamora Germans, Pagès i Garriga), winemakers (Pere

Maristany), biscuit manufacturers,<sup>8</sup> and mechanical and metallurgical factories (Materiales para Construcción y Ferrocarriles).

It is particularly worth noting that that half of the 50 big industries were in textiles, whilst the other half were distributed over a wide range of sectors, from energy, mechanical and metallurgical to food and drinks, glass manufacture, graphic arts and chemical products.

### The new manufacturing areas beyond the first metropolis

Over the second half of the 19th century the railway network, which from 1848 branched out from Barcelona to the hinterland of Catalonia and the rest of the country, encouraged industrial settlements beyond what in 1897 would be the new municipal boundaries. Industry began to spread out, unevenly at first, and the process increased through the first third of the 20th century and was consolidated in the second half. The complementary relationship between the port and railway network, which would be another factor in the expansion of industry from Barcelona, further strengthened the city's role as the centre of a developing territory with metropolitan aspirations. Many of the new factories were created on the initiative of industrialists already established in Barcelona, whilst other local ventures developed as a response to the factors mentioned above.

Along the railway line from Barcelona to Granollers, which was inaugurated in 1854 and would reach Puigcerdà in 1888, new factories sprang up in towns near Barcelona, such as Montcada and Cerdanyola. Further into El Vallès were Parets, with its Feliu i Fills fabrics and handkerchief factory, and Mollet, dominated by La Tenería Moderna Franco-Española, opened in 1897.

Along the line that crossed the Baix Llobregat, our attention is first drawn to L'Hospitalet.<sup>9</sup> In 1787 the town, next to the old municipal boundary of Sants, had ten fields for drying calico and a leather factory. However, by the turn of the 19th century it had received a large influx of industries from Barcelona. They had come in search of new locations, either to expand or to overcome town planning problems; such was the case of the Vilumara silk factory, affected by the opening of the Avinguda Diagonal. In other cases, the factories came to L'Hospitalet for the water from the artesian wells. That was the case of Jaume Trias' bag factory – an associate of the Godós in Poblenou – which arrived in 1903. In other cases they used old mills, as did Can Basté (later Tecla Sala), which arrived in 1885. In the case of the Marina de Santa Eulàlia area, between El Torrent Gornal and La Riera Blanca, in 1829 there had been little more than a laundry field dependent on a Barcelona factory, known as El Prat dels Maons, which in 1852 was sold to La Aprestadora Española SA. In 1854 the train came close to the factory, and in 1875 it was

renovated by Elies Rogent to house Mena Rocaver's company. At the turn of the century Caralt-Pérez, a jute company, and the Escorsa foundry moved there from the Barcelona Eixample.

The town of Cornellà, meanwhile, benefited from its Infanta canal, which had opened in 1819, as well as the inauguration of the railway line to Martorell in 1855. Needless to say, the Barcelona industrialists were soon flocking to the town.<sup>10</sup> Isidre Quert was the first Barcelona industrialist to settle there, in 1851, and he was shortly followed by Germans Ramoneda, manufacturers of printed calico, who would later sell the building to Josep Roses, a manufacturer of wire nails. Also, while on the subject of Cornellà, we should mention another industrial use linked to the first Barcelona metropolis: the digging of wells to extract water from the aquifers on the banks of the Llobregat in the township of Sant Boi, which, in turn, led to the opening of pumping installations in Cornellà in 1878. The aim of the company was first to supply water to one of the townships of the Barcelona plan (Sants) and gradually expand to the whole of the city. The 1880 plan clearly shows that aspiration and once it had been authorised, it would be carried out in the years that followed and grow with the takeover of the Societat del Llobregat by the Barcelona water company, SGAB, at the end of the 19th century.

A little further out of the city, in Sant Feliu de Llobregat, in 1861 the industrialist Bertrand i Cortalé installed one of the factories that would form part of his textile empire. This was soon followed by the opening of two other textile factories as well as factories from other sectors such as the Pedro Álvarez chemical company.

Although another town of the delta, El Prat de Llobregat, did not have large manufacturing installations at that time, it soon developed farming enterprises for forage and other agricultural products to be sold to the Barcelona metropolis. These included the Jaume Casanova calico drying fields and La Ricarda, where the industrialist Bertrand i Serra built a modern farm for the industrial production of milk. Years later, together with the arrival of the railway, the artesian waters of the delta would be fundamental for the location of La Paperera Espanyola (1917) and La Compañía Española de Industrias Químicas SA, known as La Seda.<sup>11</sup>

Concerns about proximity to Barcelona – even without the railway – could help to explain the presence in the region of the renowned Pujol i Bausis mosaic factory, which opened in 1876 in Esplugues de Llobregat on the site of an old brick kiln.

Those examples show that to the west of the city a whole series of industrial centres was spreading out, following the railway line and discreetly extending the metropolis beyond the boundaries of the new Barcelona of 1897.



An example of the new productive sectors, factory founded in Poblenou in 1890, AHPN

Industrial expansion also spread to the townships of the east, some of which were already on the borders of Greater Barcelona in 1897. Sant Adrià de Besòs, the closest, remained largely rural – despite evidence of some fields for drying calico in the area closest to Barcelona –, possibly because of the location of the large park planned by Cerdà. It was not until the first decade of the 20th century that a number of factories were installed there (in 1912, Can Baurier, from Roda de Ter; between 1915 and 1918, the Catalana de Gas i Electricitat power station; and in 1922, CELO, an important factory producing plain glass).

The town of Badalona, which had already embarked on its own path of industrialisation in some sectors, such as food (distilleries and production of wine and biscuits), began to take in new factories from Barcelona. Some authors have identified the metropolis' leading role in the industrialisation of Badalona as a factor of dependence that would hold back the town's creation of a local middle- and owner-class of its own.<sup>12</sup> One of the first factories to arrive was La Cros, which in 1875 installed itself between the railway and the beach. The company was looking for space to expand the small chemical products factory it had had in Sants since the early 19th century. Four years later, the first oil refinery in Spain was established nearby.

However, the movement between Badalona and Barcelona was not just one way. Some Badalona manufacturers of spirits, wines and *anís* (such as

the Clarós dynasty) settled in Sant Martí or even in the centre of Barcelona. Others set up grandiose offices in the city, best exemplified by the Anís del Mono factory on Carrer de Ferran, whose decorative style lay somewhere between Louis XV and *modernista*.<sup>13</sup> Another example was the biscuit factory opened in Badalona by the Palay family, which would later move to Barcelona in the early 20th century. At the same time companies from other sectors originating in Badalona also had offices and warehouses in Barcelona.

Adjacent to Badalona is the town of Montgat, which became an important industrial centre for Barcelona factories seeking to take advantage of the empty land by the sea and adjacent to the new coastal railway line. The best example was the Casamitjana Mensa bleach factory – the popular Conejo (Rabbit) brand – which moved there in the late 19th century from their original base in the Sants district. Montgat seemed to mark the north-eastern boundary of the second, more diffuse ring of the first industrial metropolis, which stretched, as we have seen, north from the first towns of El Vallès.

In short, at the beginning of the 20th century, Greater Barcelona had extended its manufacturing base into the nearest towns, with which it established complex two-way and complementary economic and social relations (polynuclear factories, horizontal and vertical integration). A metropolitan space gradually took shape which, though dominated by Barcelona, was still compatible with a model of industrial polycentrism. At the same time, Barcelona was the centre for the storage and distribution of raw materials and manufactured products through the port and the railway network. Moreover, the consolidation of owner institutions and educational centres providing technical training at different levels (Industrial School, Schools of Arts and Crafts) shaped the city as a centre of middle-class business power and technical and scientific innovation.

The appearance in 1902 of the publication *Barcelona artística e industrial*, sponsored by the Societat d'Atracció de Forasters, is further testament to the fact that Barcelona had become a metropolitan industrial centre. It included in its pages not only the factories within the municipal boundaries but also those on the periphery and many others that the city as their centre of trading operations and services linked to manufacturing activity.

## NOTES

1. Mercè TATJER, “La indústria a l'Eixample de Barcelona: El sector de Sant Antoni, 1860-1875”, in Ramon Grau (coord.), *Cerdà i els altres. La modernitat a Barcelona, 1854-1874*, Barcelona, Ajuntament de Barcelona (Barcelona Quaderns d'Història, 14), 2008, pp. 279-302.

2. Mercè TATJER, “L'eixamplament de l'espai industrial de Barcelona”, in Ramon Grau (coord.), *Dilemes de la fi de segle, 1874-1901*, Barcelona, Ajuntament de Barcelona (Barcelona Quaderns d'Història, 16), 2010 [at press].

3. The data for the plan come from the lists of industrial contribution for Barcelona and the townships of the 1906 plan, except Sant Martí, which correspond to 1904. The companies that had a tax rate of more than 1,000 pesetas (with no surcharges) have been selected in order to make the plan readable, given the concentration of industries in particular parts of the city. That figure includes the companies of a certain importance and excludes the smaller ones, which were often more like craft shops. However, we may have left out some factories with a greater spatial impact and a smaller tax rate, or some that were closed at the time the contribution list was made. That would be the case of some precincts that appear on the 1891 plan (Auxiliar de Indústria at La Marina de Sants, Can Batlló at Les Corts or Industrial Harinera Barcelonesa on the boundary with Sant Andreu). For more information about the drafting of this plan, see “The main industries of Greater Barcelona, 1906” in this book.

4. With regard to Sant Andreu, we have to compare these data with the ones compiled by Martí CHECA; Pilar GIMENO, “Anatomia d'un paisatge industrial: Districte IX-Sant Andreu (1904-1934)”, *Finestrelles* (Barcelona, Centre d'Estudis Ignasi Iglesias), 9 (1998), p. 177. The differences in the rate may be due to the fact that the authors included the surcharges within the values.

5. Mercè TATJER, “Les grans fàbriques de Barcelona i el Pla Cerdà: el cas del Poblenou”, *Barcelona i les grans fàbriques dels segles XIX i XX, VIII Jornades d'Arqueologia industrial de Catalunya*, Barcelona, 2009 [at press].

6. For more information about the chemical products factory, see Mercè TATJER; Antoni VILANOVA; Yolanda INSA, “Creixement urbà i primeres implantacions fabrils a Les Corts, 1845-1868”, in Ramon GRAU (coord.) *La ciutat i les revolucions, 1808-1868. II: El procés d'industrialització*, Barcelona, Ajuntament de Barcelona (*Barcelona Quaderns d'Història*, 11), 2006, pp. 239-256.

7. Mercedes ARROYO, *La indústria del gas en Barcelona*, Barcelona, Ediciones del Serbal, 1996.

8. For the history of the Viñas biscuit factory, an industry largely engaged in export and supplying ships, see Mercè Tatjer and Antoni Vilanova, *Informe patrimonial de l'antiga fàbrica de Galetes Viñas*, Barcelona, 2008.

9. About the Baix Llobregat, see Àngel CALVO (coord.), *El pas de la societat agrària a la indústria al Baix Llobregat*, Barcelona, Publicacions de l'Abadia de Montserrat, 1995-1997. And, about L'Hospitalet, Joan CASAS i FUSTER, *La formació de la indústria a L'Hospitalet: els antecedents i la primera embranzida (1789-1890)*, L'Hospitalet de Llobregat, Centre d'Estudis de L'Hospitalet, 1985.

10. Santos M. MATEOS RUSILLO, “Valor, estat i coneixement del patrimoni industrial de Cornellà”, *V Jornades d'Arqueologia Industrial de Catalunya*, Barcelona, Associació / Col·legi d'Enginyers Industrials de Catalunya, 2002, pp. 437-452.

11. Josep FERRET PUJOL, *Primer centenari del descobriment de les aigües artesianes del delta del Llobregat*, Barcelona, Comunitat d'Usuaris d'Aigua del Delta del Llobregat, 1993, pp. 41-44.

12. About industry in Badalona, see Joan VILLARROYA (dir.), *Història de Badalona*, Badalona, Museu de Badalona, 1999, pp. 124-138 and 247-268.

13. *Enciclopèdia artística. Guia de Barcelona*, Vilanova i la Geltrú, Oliva Impr., 1908, p. 435.

## The main industries of Greater Barcelona, 1906

Lluís M. Bou, Francesc Caballé and Mercè Tatjer

The table of the main industries of the city of Barcelona and the neighbouring towns at the beginning of the 20th century – which we have used to configure the location plan – has been drawn up based on information taken from the books of industrial registrations in the *Hacienda Moderna* (Modern Treasury) series, conserved in the Archive of the Crown of Aragón. The annotations made in the books of registrations provide information about the name of the company, the official address, the gross rates (according to the industrial activity section), as well as other information about the payments in instalments to be made over the year and any surcharges. These industrial registrations have been the main tool for the study and analysis of the industrialisation of Catalonia. For the city of Barcelona, there are outstanding works by Jordi Nadal and Xavier Tafunell about Sant Martí<sup>1</sup>, by Martí Checa and Pilar Gimeno for Sant Andreu<sup>2</sup> and, more recently, the research into Les Corts<sup>3</sup> or the Eixample<sup>4</sup>.

Among the different volumes of the industrial registrations series for Barcelona and the neighbouring towns, we have used the ones for 1906 for the city of Barcelona, Sants, Les Corts, Gràcia, Sant Andreu, Horta and Sant Gervasi. In the case of Sant Martí de Provençals – the longest series –, we chose to use the 1904 industrial registration, from which some information had already been extracted to help with the analysis and which contains the same values that appear as the tax rate for 1906.

The information extraction criterion has been to compile all the industries with a gross rate (without surcharges) of 1,000 pesetas or more, taking care to list the industries with lower rates than the established minimum and which also paid for other activities or under different headings, the sum of which, however, was more than 1,000 pesetas. Altogether, 218 factories appear, some of which were occupied by shared industries.

The information has been extracted taking into account the names of the industries that appear and their tax address. In some cases, that address does not correspond to the location of the factory, but to its offices or company headquarters. Therefore we have, with the help of other sources (especially guides and planimetric information), had to interpret not only the addresses that appear on the industrial registrations but also to know how to locate them on the basic plan. Only in four cases has it not been possible to identify the physical location of the old factories.

Both the list we are presenting and the plan drawn up are an invaluable contribution, since they trace the early materialisation on the territory of Greater Barcelona of the most important manufacturing fabric that shaped the first industrial metropolis at the beginning of the 20th century.

### NOTES

1. J. NADAL and X. TAFUNELL, *Sant Martí de Provençals, pulmó industrial de Barcelona (1847-1992)*, Barcelona, Columna, 1992.
2. M. CHECA and P. GIMENO, “Anatomia d’un paisatge industrial: Districte IX – Sant Andreu (1904-1934)”, *Finestrelles*, 9, 1998.
3. M. TATJER and A. VILANOVA, *La indústria a les Corts*, Barcelona, Ajuntament de Barcelona – Districte de Les Corts, 2002; M. TATJER, A. VILANOVA and Y. INSA, *Memòria del passat industrial de Les Corts*, Barcelona, Ajuntament de Barcelona – Districte de Les Corts, 2005.
4. M. TATJER, “La indústria a l’Eixample de Barcelona: el sector de Sant Anton”, *Barcelona Quaderns d’Història*, 14, 2008.

Name	Address	Tax rate	Sector/Activity	Observations
Sociedad Catalana de Alumbrado por Gas	C. Ginebra	100,500	Gas	BARCELONA (Barceloneta)
Lebon, Eugenio i Cia.	C. Gasòmetre	66,468	Gas	SANT MARTÍ
Compañía Barcelonesa de Electricidad	Avda. Paral·lel / Cabanas 1-5	43,710.75	Electricity	BARCELONA
La España Industrial	C. Muntadas, 1	29,540.33	Textiles	SANTS
Central Catalana de Electricidad	C. Vilanova, 32	23,579.43	Electricity	BARCELONA
Rocamora hermanos	P. Cementiri, 89	20,120	Chemical	SANT MARTÍ
Lebon, Eugenio i Cia	C. Còrsega /Llúria	15,590	Gas	GRÀCIA
Maquinista Terrestre i Marítima	C. San Ferran, 1	14,427	Metallurgical	BARCELONA (Barceloneta)
Sobrinos de Juan Batlló	C. Constitució, 19	13,632.08	Textiles	SANTS
Folch, Albiñana i Cia.	P. Cementiri, 82	13,194	Alcohol	SANT MARTÍ
Hilaturas Fabra y Coats	C. Sant Ildefons, 55	9,840.85	Textiles	SANT ANDREU
Sert hermanos e hijos	C. Sagrera, 45	8,765	Textiles (wool)	SANT MARTÍ
Sociète Lainière Barcelonaise	C. Indústria, 71	8,439.40	Textiles (wool)	SANT ANDREU
Valet Vendrell y Comp <sup>a</sup>	C. Badal, 157	8,162.73	Textiles	SANTS
Torres Vendrell, Jaime	C. Villena, 4	8,044	Textiles (cotton)	SANT MARTÍ
Hijos de M. Puig	C. Indústria, 69	7,775	Textiles (spinning)	SANT ANDREU
Serra Arolas, Juan	C. Nord i Miracle	7,108.20	Textiles	SANTS
Pagès i Garriga	C. Ciervo, 13-15	6,926	Chemical	SANT MARTÍ
Figueras, Sagrera i Cia.	C. València, 19 (no. 645)	6,856	Flour mill	SANT MARTÍ
Ricart de Còrdoba, Felip	Pge. Ricart, 26	6,305	Textiles (finishing)	SANT MARTÍ
Damiáns, Alejandro	C. Urgell, 149-151	6,087.75	Foundry	LES CORTS
Catalán Worsted	C. Llacuna, 72	5,702	Textiles (wool)	SANT MARTÍ
Carné, Amadeo	C. Ponent, 24	5,669	Metallurgical	BARCELONA
Material para Ferrocarriles y Construcciones	C. Vulcano	5,494	Metallurgical	SANT MARTÍ
Arañó, Claudio, vda. E hijos	C. Sant Joan de Malta, 62	5,342	Textiles (wool)	SANT MARTÍ
Petri, Ernesto (Sucesor de Luis Moritz)	C. Casanova, 2	5,326	Beer	BARCELONA
Damm, J.	C. Urgell, 67-71	5,200	Beer	BARCELONA
Viñas i Cia.	C. Castillejos, 144	4,999	Food (biscuits)	SANT MARTÍ
March Torrens i Cia. - 2.214	Cta. Mataró, 249	4,904	Textiles	SANT MARTÍ
Martí Torrens y Comp. - 1.360				
Balla, Àngel - 1.330				
Henrich y Compañía (Sucesores de N. Ramírez.)	C. Còrsega, 348	4,765	Graphic arts	GRÀCIA
Compañía Anónima de Productos Químicos	C. Coello, 1	4,470	Chemical	LES CORTS
Portabella Pedro Hijos de	C. Roger de Flor, 200	4,022.2	Metallurgical	BARCELONA
Casas i Jover, Joaquim	Cta. Mataró, 295-297	3,976	Textiles (finishing)	SANT MARTÍ
Recolons, Bartomeu, hijos de	Pge. Recolons	3,962	Textiles (cotton)	SANT MARTÍ
Oller y Niqui	C. Muntaner, 45	3,930.60	Textiles	BARCELONA

Industries with more than 1,000 pesetas tax rate (without surcharge), 1906

Source: ACA. Hacienda moderna. Matriculas Industriales.

Name	Address	Tax rate	Sector/Activity	Observations
Sociedad Catalana Alumbrado por Gas	Riera de Sant Andreu / Ferrocarril	3,900	Gas	SANT ANDREU
Lucena i Cia., Sucs. de J.	Cta. Mataró, 444	3,789	Textiles (finishing)	SANT MARTÍ
Martí y Llopart	Cta. Mataró, 599	3,772	Textiles (finishing)	SANT MARTÍ
Pratmasó, Miguel vda. E hijos	C. Sagrera, 279	3,745	Textiles (cotton)	SANT MARTÍ
Palà, Salvador	C. Puigmartí, 8	3,730	Textiles (shared industry)	GRÀCIA
Batló y cia.	C. Fruita, 42	3,693.90	Textiles (silk)	GRÀCIA
Alexander Hermanos	C. Ginebra, 40-42	3,647.25	Metallurgical	BARCELONA (Barceloneta)
Sociedad Sucesora de Luis Bonefoy	C. Holanda, 11	3,608.80	Chemical	SANTS
Maristany, Pere	Cta. de Ribes, 40-42	3,570	Wine	SANT MARTÍ
Gironella, José	C. Ramis, 1- 3	3,480	Textiles	GRÀCIA
Comas, Fco. y sobrinos	C. València, 337	3,427	Textiles (finishing)	SANT MARTÍ
Pastells y Regordosa	C. Recared, 4	3,400	Textiles (finishing)	SANT MARTÍ
Lligé y Compañía	C. Manso, 31 and Viladomat, 41	3,360	Glass	BARCELONA
Juncosa Tarrida	C. Badal, 155	3,360	Glass	SANTS
Gasol, Vicenç, soc. en Cta.	C. Torelló	3,296	Textiles (finishing)	SANT MARTÍ
Casals, Primitivo	C. Sant Joan de Malta, 62	3,225	Textiles (finishing)	SANT MARTÍ
Benguerel, Leon				
Sans, Viuda e Hijos de Francisco	C. Casanova, 72 – Diputació, 207	3,209	Textiles (cotton)	BARCELONA
Orpí y Tomàs	C. Alí-Bei	3,154	Textiles (cotton)	SANT MARTÍ
Bertrand e Hijo, M.	C. Marina, 62	3,128.13	Textiles	SANTS
Giménez Sánchez, Joan	Cta. Mataró, 81	3,125	Textiles (finishing )	SANT MARTÍ
Viuda e Hijos de Ramón Almirall	C. Coello / Diagonal, 36	3,079	Textiles	GRÀCIA
Godó i Cia.	C. Wad-Ras / Llacuna, 16	3,004	Textiles (jute)	SANT MARTÍ
Matas i Compañía	C. Granada, 19 / Matas, 2	2,989	Textiles	GRÀCIA
Orsola Solá i Cia	C. Calàbria, 81	2,980	Hydraulic mosaics	BARCELONA
Rius, Martí	C. Aurora, 29 – Lealtat, 6	2,905	Textiles (finishing)	SANT MARTÍ
Vila, Juan	C. Ali-Bey, 96	2,789.70	Textiles	BARCELONA
Mas i Batalla, soc. en Cta.	C. Villena, 2	2,740	Textiles (cotton)	SANT MARTÍ
Gili, Andreu	C. Catalunya, 16	2,720	Flour mill	SANT MARTÍ
Pallarès, Salvador	-	2,720	Textiles (cotton)	SANT MARTÍ
Catasús i Cia.	C. Balmes	2,700	Chemical	SANT MARTÍ
Mata, Domingo	C. Pallars, 73	2,677.90	Chemical	BARCELONA
Antich, Joan	Pge. Aymà, 10-12	2,640	Alcohol	SANT MARTÍ
Cammany i Compañía	C. Viladomat, 43	2,600	Beer	BARCELONA
Monturiol Guillermo, Juan	Marqués del Duero, s/n	2,600	Metallurgical	BARCELONA
Barbarà, Miquel, fills de	C. Indústria, 2	2,571	Textiles (cotton)	SANT MARTÍ
Felipe, Manuel	C. Consell de Cent, 481	2,565	Textiles	BARCELONA
Mundó Anglés, Josep	C. Aragó, 418	2,550	Textiles (cotton)	SANT MARTÍ
Creus, José	C. Hortens, 5	2,540.80	Food (biscuits)	SANT GERVASI

Name	Address	Tax rate	Sector/Activity	Observations
Estrella, La	C. Enamorats, 107-115	2,522	Flour mill	SANT MARTÍ
Fabregas, Cayetano	Travessera, 95	2,520	Textiles	GRÀCIA
Sucesores de I. Neufville	C. Santa Teresa, 10	2,496	Graphic arts	GRÀCIA
Pérez Pérez y Gili	C. Llacuna, 122	2,466	Textiles (shared)	SANT MARTÍ
Munt Miralpeix, Onofre				
Fabra i Coats, Cia. Anònima	C. Sagrera, 60 – Provença, 62	2,430	Textiles (cotton)	SANT MARTÍ
Tey Tintorer, Joan	C. Independència, 226-228	2,418	Flour mill	SANT MARTÍ
Tarrats i Canals	C. Sagrera, 279	2,400	Textiles (cotton)	SANT MARTÍ
(Sucesors de Fabril Algodonera)				
Bach Hermanos, Ramon	C. Roger de Flor, 152	2,346	Textiles (spinning)	BARCELONA
(Sucesors de Mariano Torredadella)				
Armario de la Exportación	Pg. Sant Joan, 192	2,256	Graphic arts	BARCELONA
Marco i Cardona	C. Coello	2,214	Textiles (silk)	GRÀCIA
Nadal, Antoni	C. Catalunya (Ciutat de Granada), 90	2,203	Textiles (cotton)	SANT MARTÍ
Clarasó, Rafael	Cta. Verneda	2,192	Textiles (cotton)	SANT MARTÍ
Detouche Tusell, Emilio	C. Matadero, 28	2,184	Metallurgical	GRÀCIA
Pujol, Pere i fills	C. Miquel Ferrer, 236	2,172	Textiles (cotton)	SANT MARTÍ
Gironella, Enric	P. Cementiri, 153	2,158	Wine	SANT MARTÍ
Garcia i Cia., A.	C. Estrella	2,150.4	Food	SANTS
Vilumara, Francisco	Travessera, 155 and 157	2,136.1	Textiles (cotton)	GRÀCIA
Rivière, Francesc i fills	C. Catalunya (Ciutat de Granada), 57	2,108	Metallurgical	SANT MARTÍ
Klein, J. I Cia.	Cta. Mataró, 489	2,097	Rubber	SANT MARTÍ
Salisachs, Pere	P. Cementiri, 164	2,080	Flour mill	SANT MARTÍ
Bernadas, Salvador	C. Escorial, 162,	2,079	Textiles (wool)	GRÀCIA
Ribas, Joan i Cia.	C. Amistat, 23-25	2,047	Textiles (cotton)	SANT MARTÍ
Roldua, Juan	C. Badal i Doncellas	2,040	Textiles (spinning)	SANTS
Gallarda, Joan	Pge. Ricard – Ribes, 94-96	2,035	Flour mill	SANT MARTÍ
Pladellorens, Magí	P. Cementiri, 234	2,000	Wine	SANT MARTÍ
Productos químicos, Cia. Anònima	C. Dos de Maig, 497	1,975	Chemical	SANT MARTÍ
Sala, Salvador	C. Tusset, 27	1,967.4	Chemical	GRÀCIA
Sociedad Anónima “El Tibidabo”	Tibidabo (Inici Funicular Tibidabo)	1,933	Electricity	SANT GERVASI
Casas, Francesc i fill	C. Joncar, 33	1,917	Textiles (cotton)	SANT MARTÍ
Guardiola, Juan Francisco	Cta. Ribes	1,908	Construction of machinery	SANT MARTÍ
Juncosa, Evaristo	C. Manso, 17-25	1,890	Food (chocolate)	BARCELONA
Hijos de Esteban Pascual	C. Encina, 4	1,881	Textiles	GRÀCIA
Comas, Fernando	C. Calabria, 9	1,850	Chemical (soap)	BARCELONA
La Unión Corchetera	C. Sarrià, 43	1,838.29	Metal workshops	LES CORTS
Romeu Parera, Ramón	-	1,815	Textiles (wool)	SANT MARTÍ
Montey e Hijo, José	C. Muntadas, 1	1,808	Textiles (prints)	SANTS

Name	Address	Tax rate	Sector/Activity	Observations
Alier Vidal, Pedro	C. Quevedo, 27	1,805.05	Textiles	
Foret, G	C Marina – Avinguda Icària	1,800	Chemical	
Giró, Bartolomé (760)	C. Riereta, 35	1.439,10	Shared:	BARCELONA
Gras, Mariano (76)			Textiles	
Roura Luciano y Castells (152)			Food (chocolate)	
Tuques, Antonio (20)				
Solernou, Juan (459)				
Valenera, José (320)				
Olivella, Andres	C. Parlament, 30	1,768	Metallurgical	BARCELONA
Viuda de Manuel Nogueras	C. Buenasuerte	1,748	Chemical	SANT MARTÍ
Guasch, Ramon	C. Indústria, 93-95	1,739.20	Chemical	GRÀCIA
Romeu, Bonastre Franciso	C. Floridablanca, 147	1,680	Textiles (prints)	BARCELONA
Romeu, Fort Francisco				
González, Luis	C. Clot, 212	1,664	Food (vinegar)	SANT MARTÍ
Iglesias, Felipe	C. Sant Antoni, 30	1,576.50	Textiles	GRÀCIA
Arañó Pratsmarsó i cia	C. Mercedes	1,505.25	Textiles	SANTS
Martí y Compañía	C. Radas, 42	1,500	Textiles (felt for hats)	BARCELONA
Puigmal, Cosme	Pg. Vieta, 9	1,500	Wine trader	SANT MARTÍ
Musola y Cia, Juan	C. Gasòmetre, 10 i 12	1,500	Food trader	SANT MARTÍ
Ibarra Puig, Juan	C. Gasòmetre	1,500	Trader	SANT MARTÍ
Industrias Mecánicas Consolidadas	C. Port, 349	1,494.80	Construction of machinery	SANTS
Vidua de B. Albanell Duran	C. Pallars, 141	1,482	Textiles	SANT MARTÍ
Rovira Casanellas, Ramon	C. Hortelano, 14	1,482	Machinery for flour mills	SANT MARTÍ
Montaner y Simon	C. Aragón, 309	1,456	Graphic arts	BARCELONA
Pascual Costa, Juan	C. Tramontana	1,456	Flour mill	SANT ANDREU
Hijos de Pedro Avella	C. Villaroel, 28	1,441	Chemical	BARCELONA
Ros Puig y Compañía	C. Consell de Cent, 423	1,439.10	Chemical	BARCELONA
Vilella i Casas	C. Aurora, 24	1,437.50	Mechanical carpentry	BARCELONA
Heusch y Ca. (Hugo)	C. Diputació, 114	1,416	Metallurgical	BARCELONA
“La Hispano Suiza”	C. Floridablanca, 60	1,400	Construction of machinery	BARCELONA
E. y M. Sauri, S. en C.	C. Amàlia, 37	1,392	Construction of machinery	BARCELONA
Butsems y Cia. M. Carlos	C. Olivo	1,380	Hydraulic mosaics	BARCELONA
Riviere e Hijos, Francisco	C. Antunez	1,376	Metallurgical	BARCELONA
Hijos de N. Baucells	Cta. Mataró	1,362.46	Textiles	SANT MARTÍ
Cabach, Francisco	C. Tàpies, 4	1,344	Graphic arts	BARCELONA
Llenas y Gallet	C. Riereta, 19 and Riereta, 21	1,330	Textiles	BARCELONA
Planas y Riera	C. Provençals, 2	1,318	Tannery	SANT MARTÍ
Deu y Compañía, José	C. Rosés, 23 a 29	1,300	Wine	LES CORTS
Jové, José Maria S. En C.	C. Muntadas, 26	1,300	Wine	SANTS

Name	Address	Tax rate	Sector/Activity	Observations
Sucesores de J. Sala Mirapeix	C. Pallars, 105	1,292	Textiles	SANT MARTÍ
Pattberg, Carlos	C. Rosselló, 247	1,276	Carding factory	GRÀCIA
Badía y Mañé	C. Mallorca	1,231.88	Electricity	BARCELONA
Prisa Gibert de Mendivil y Cia.	C. Migdia	1,228.80	Food	SANTS
Gurt Hermanos y Comp.	C. Sant. Joan de Malta,179	1,222	Construction of machinery	SANT MARTÍ
Gili Guardiola Andrés	C. Wad-ras, 177	1,222	Flour mill	SANT MARTÍ
Garriga, Antonio Solá, Francisco	C. Riereta, 24	1,216	Textiles (shared)	BARCELONA
Industria Eléctrica	C. Muntaner, 55	1,200	Locksmith	BARCELONA
Nogués Hermanos	C. Carrera, 30 32	1,200	Marble	BARCELONA
Valls Hermanos	C. Campo Sagrado, 29	1,200	Construction of machinery	BARCELONA
Alseda, Miquel	C. Rolanda, 3- 5	1,200	Chemical (soap)	SANTS
Virgili Saumiell, Pedro	C. Gasòmetre, 2	1,200	Chemical (alcohol)	SANT MARTÍ
Pterfter, Teresa Asunción	C. Mataró, 181	1,200	Metallurgical	SANT MARTÍ
J. Valera Ricci	C. Horta	1,200	Textiles (hats)	SANT MARTÍ
Ferrer, Benito	C. Sagrera, 225-227	1,200	Chemical	SANT MARTÍ
Camps, Viuda de Felipe	C. Nàpols, 109	1,197	Textiles	BARCELONA
Viuda de Maristany i Arnó	C. Llull, 101	1,170	Wine	SANT MARTÍ
Hijos de F. Vidal	C. Igualdad, 69	1,169	Wine	SANT MARTÍ
Batallé i Cía	-	1,165	Wine	SANT MARTÍ
Coll Vila, Eduardo	C. Triumfo (Rambla Poblenou)	1,140	Textiles	SANT MARTÍ
Bagaria, Buenaventura	C. Riereta, 18-20	1,133.65	Textiles (spinning)	BARCELONA
Solé Alsina, Antonio	C. Or, 5	1,130	Food (chocolate)	GRÀCIA
Lucas y Compañía	C. Doctor Dou, 7	1,128	Textiles	BARCELONA
Comas, Pedro	C. Sta. Teresa	1,126.40	Food	SANTS
Pellerín, Luis	C. Clot, 140	1,120	Textiles (prints)	SANT MARTÍ
M. y A. Suñol	C. Pujades, 74	1,120	Wine	SANT MARTÍ
Hijos de José Ponsa	Cta. Antiga de València	1,120	Textiles (prints)	SANT MARTÍ
Doménech, José	C. Wad-Ras, 223	1,120	Wine	SANT MARTÍ
Casals Bertrán, Pedro	P. Cementiri, 334	1,120	Wine	SANT MARTÍ
Boada y Gurt	C. Sant Pere, 17	1,120	Textiles (prints)	SANT MARTÍ
Alsina y Comp., Joaquín	C. Gasòmetre, 6	1,120	Wine	SANT MARTÍ
Arango, Josefa	P. Cementiri, 169	1,100	Wine	SANT MARTÍ
Florensa y Comas	C. Bordeta, 147	1,092	Ceramics and porcelain	BARCELONA
Hijas de Francisco Vila	C. Verneda, 24	1,080	Textiles (finishing)	SANT MARTÍ
Bachi, Jaime (Vachier, Jaime)	C. Sant Antoni, 24	1,072	Foundry	GRÀCIA
Vallmitjana, Julio	C. Sant Antoni, 4	1,072	Foundry	GRÀCIA
Miguelz, Eustasio	Cta. Mataró, 103	1,070	Wine	SANT MARTÍ
Gironella, Enrique	C. Independència, 7	1,070	Wine	SANT MARTÍ

Name	Address	Tax rate	Sector/Activity	Observations
Doménech, Francisco	P. Cementiri, 167	1,070	Wine	SANT MARTÍ
Costas Llumosa, Joaquín	C. Castillejos, 9	1,070	Wine	SANT MARTÍ
Pons e Hijo, Miquel	Cta. Mataró, 99	1,070	Wine	SANT MARTÍ
Jordi Albiñana y Comp.	P. Cementiri, 82	1,060	Ice factory	SANT MARTÍ
Dominguez, Vicente	C. Pallars and Sicília	1,050	Shoes	BARCELONA
Salvador y Gaspar	C. Banys Nous, 12	1,050	Textiles (lace)	BARCELONA
Veiga, Manuel	C. Cortes, 414	1,050	Shoes	BARCELONA
Volart, Hijo de Casimiro	C. Dos de maig	1,050	Textiles (lace)	BARCELONA
Anglada Vernis	C. Castillejos, 70	1,020	Wine	SANT MARTÍ
Font y Compañía	C. Dos de maig, 101	1,017	Wine	SANT MARTÍ
Quinquer, Ignacio	P. Cementiri, 2	1,017	Wine	SANT MARTÍ
Deu y Matas, Ramon Isidro	Cta. Mataró, 119	1,017	Oil	SANT MARTÍ
Banuell, Jacinto	C. Marina, 284	1,017	Oil	SANT MARTÍ
Álvarez y Compañía	C. Clot, 114	1,017	Chemical	SANT MARTÍ
Xammar, José	C. Ausiàs March, 147	1,017	Chemical	SANT MARTÍ
Trías Francisco	C. Casp, 146	1,017	Textiles	SANT MARTÍ
Solé, Manuel y Pablo	C. Clot, 4	1,017	Oil	SANT MARTÍ
Rovira y Compañía	P. Cementiri, 22	1,017	Wine	SANT MARTÍ
Martí y Compañía, Antonio	Cta. Mataró, 253	1,017	Iron	SANT MARTÍ
Jacas Samsó, José	Cta. Mataró, 301	1,017	Iron	SANT MARTÍ
Lasoli y Compañía	A. Fontanet	1,016	Tannery	HORTA
Sert Hermanos	C. Culebra, 23-25	1,012.75	Textiles	GRÀCIA
Ravella y Compañía	C. Camp, 23	1,012	Textiles (dyeing)	SANT ANDREU
Ribas y García	C. Sant Joan, 7	1,012	Textiles (dyeing)	SANT MARTÍ
Tasso, Luis	Arc del Teatre, 31	1,008	Graphic arts	BARCELONA
Viuda de Manuel Almasqué	C. Rubí, 24	1,008	Textiles	GRÀCIA
C. A. Boequillon	C. Dos de maig, 28	1,004.64	Textiles	SANT MARTÍ
Hijos de Gabriel Iborra	C. Sant Sebastià (Marià Cubí), 72	1,003.30	Textiles	SANT GERVASI
C. Hijos de Torras y Lleó	C. Carme, 29	1,000	Graphic arts	BARCELONA
Soler i Bance	C. Campo Sagrado, 115	1,000	Construction of machinery	BARCELONA
Sucesores de Comas Ricard	Ronda Sant Pere, 4	1,000	Graphic arts	BARCELONA
Terradas, Hermanos	C. Llull, 12 – Ramon Turró	1,000	Graphic arts	BARCELONA
Viuda de Juan Roura	C. Nàpols, 113	1,000	Graphic arts	BARCELONA
Viuda de Wenceslao Guarro	C. Consell de Cent, 464	1,000	Graphic arts	BARCELONA
Vivé i Casals	C. Diputació, 492-494	1,000	Mechanical metallurgical	BARCELONA
Font y Compañía	C. Urgell	1,000	Chemical (soap)	LES CORTS
Viuda de Ferrer	-	1,000	Chemical	SANT MARTÍ
Carné, Fernando	Cta. Mataró, 61	1,000	Metallurgical	SANT MARTÍ



Emili Sala i Cortés, Salvador Andreu house, Carrer d'Aragó, 257, 1895



Pere Bassegoda i Mateu, Esteve Recolons house, Carrer de Rosselló, 192, 1904



Antoni Costa i Guardiola, Joan Canas house, Carrer de Balmes, 106, 1898



Adolf Ruiz i Casamitjana, Adolf Ruiz i Casamitjana house, Carrer de Balmes, 160, 1904

## The facades of the Eixample: composition, materials, finishes and colour

Teresa Macià

In just forty years, Barcelona was transformed from a walled mediaeval city into a modern metropolis. That rapid transformation can be traced in the evolution of the facades in the Eixample (extension) district. The architectural and ornamental elements, their arrangement, the materials, the finishes and the colour reveal breaks and continuities. The facades are the public face of the building and correspond to different styles and changes in taste in a historical period when the craft tradition was being replaced by new building techniques. Cerdà fixed the structural parameters of the facade of the Eixample, but made it open to change with a dynamic of its own which enabled the incorporation of constant innovations.<sup>1</sup>

### In search of homogeneity

#### The neo-classical city

During the first thirty years of the construction of the Eixample, the applicable building regulations were taken from the municipal ordinance of 1856, which generally followed the proposals set out in the 1771 Works Edict and aimed at a neo-classical city with a unified architectural language. To achieve that uniformity, it set the maximum height of buildings, the projection of the balconies – it made it compulsory to include a minimum of three per building –, the regular distribution of the openings and the increasing height of the storeys as they approached the ground floor, in order to ensure that light and air entered the rooms of buildings in the narrow streets of the still-walled-in city.

There was a search for a model of facade similar to that imposed on the buildings along the axial thoroughfare Ferran-Jaume I-Princesa, exemplified by the standard facades proposed by municipal architect Josep Mas i Vila in 1826.<sup>2</sup> A facade with almost no line of symmetry and with openings that tie in with the balcony window and the height of the storeys, which decreases as the building rises. All the elements that could impact on the facade are resolved with repertory models. In 1833, regulations were introduced that even restricted what colours could be used to paint or stucco the facade.<sup>3</sup>

The buildings of the Porxos d'en Xifré (1836) and Plaça Reial (1848) also respond to that will so typical of enlightened rationalism to order the

city through the regular composition of the facades. The shift in tastes had begun at the end of the 18th century when, with the introduction of iron into construction, professional training required some additional lessons. In 1797, the Board of Trade managed to obtain authorisation from Madrid to open an architecture class. The classes began in 1817 and two levels of teaching were offered, one practical and one more theoretical, designed for architects. But in order to qualify as an architect, which was necessary if you wanted to take part in public works, candidates had to pass an examination at one of the royal academies of fine arts in Madrid, Valencia or Seville.

The school and the academies imposed the change in taste through training and the municipal administration through legislation. Barcelona is not an exceptional case; most European cities passed similar regulations. In the case of Paris we find that, in addition to the maximum height, the decrees issued between 1848 and 1855 controlled the continuity of the general lines of the facades marked by continuous balconies, cornices and roof terraces. On the basis of an old edict from 1607, the authorities decreed that the surface decoration of each new building had to tie in with that of the adjacent buildings.<sup>4</sup>

In Barcelona, once the walls had been demolished and the new plan approved, the restrictions imposed by the 1856 ordinance on the appearance of facades were left untouched while the debate focused primarily on issues of habitability.<sup>5</sup>

In 1874 Barcelona City Council appointed a committee to study the changes to be applied to the building regulations for the new city. The regulation of the Extension Law passed in 1877 made it possible to rewrite the code in force and adapt it to the sphere of the Eixample. In 1879, through a royal order, a series of new proposals were approved; as far as the facade was concerned, they included an authorisation to increase, in streets wider than 20 metres, the maximum height to 22 metres. The other articles regulating the appearance of the facade were maintained until the 1891 ordinance.

### A new city, neo-classical in composition and historicist in ornamentation

We will leave aside the first isolated garden buildings erected after the model of the 18th century mansions and the small houses of English or picturesque inspiration proposed by some of the construction companies, in order to focus our attention only on the buildings in continuous rows, since that was the type adopted in the end.

The characteristic facade model of those early days is exemplified by the section accompanying the works permit for the house designed by J. Roca i Bros in 1867 for M. Xiqués (Illustration 2).<sup>6</sup> It is a four-storey house with the characteristic decreasing height of the storeys and the projection of the balconies.<sup>7</sup>



1. Carrer de Roger de Llúria, 7, 1875



2. J. Roca i Bros, Manuela Xiqués house, Gran Via de les Corts Catalanes, 586, 1867, AMAB

The height of the storeys will be at least as follows: from the level of the pavement to the flooring on the first storey, 20 palms (3.88 m), from flooring to flooring on the first storey 18 palms (3.492 m), on the second storey 17 palms (3.298 m), on the third storey, 16 palms (3.104 m), on the fourth storey 13 palms (2.522 m). The minimum height of the attic, which must not be lacking in any new building, will be 3 palms (0.582 m).

The floors of the balconies cannot protrude from the wall more than indicated in the following table: [...] streets of more than 35 palms (6.790 m), 1st storey 4.00 palms (0.776 m) 2nd storey 3 palms (0.582 m), 3rd storey 2.5 palms (0.485 m), 4th storey or mezzanine 1.25 palms (0.242 m).

In Roca i Bros' sketch we can see how the keystones of the arches of the ground floor support the flagstones of the balconies of the first floor, whereas on the second and third floors the corbels are the supporting element, and on the top floor the small projection does not need any support at all. The only element that breaks the regularity of the facade is the cast-iron railing that runs along the balcony of the main floor. The gradation in height is underlined by the gradual simplification of the decorative elements: frames, lintels and corbels. Some horizontal strips, the plinth and the hoop (the line that marks the slab of the storey), the cornice and the floors of the balconies, break the verticality of openings and corners. The horizontal strips are usually stone coloured, even though they are made of stucco, and contrast with the ochre or earth colour

of the outer facing wall. The woodwork includes brown shutters and green blinds and the railings are painted black or grey (Illustration 1).

The crest is straight and above the line of the cornice only an open-work wrought-iron railing stands out. The total height could only be exceeded by those railings, but they had to conform to one of the models approved by the council. The regulations also allowed towers and oriel windows atop the facades, but they had to respect the axis of symmetry and be proportional to the measurements of the facade.<sup>8</sup>

[...] beyond the elevation no wall of the building can rise, nor any other object be placed on it; but if there is a wish for the storeys to have greater elevation, on the roof above the height of 90 to 100 palms respectively, an iron railing constructed according to one of the models approved by the Municipality will be allowed.

Towers and oriel windows will be allowed provided that they are built in the direction of the centre of the facade and in an elegant manner, all of which will be marked on the plan of the building submitted." Article 33: "The maximum elevation of the oriel windows will be 20 palms (3.88 m) on the buildings whose front is no wider than 60 (11.64 m). In other cases, the municipality will decide the greatest elevation considering all the circumstances.

The classical conception of the building is evident from the fact that the ground floor functions as the supporting part of the building, with a large

stone plinth, while the outer-wall facing is marked by broad horizontal strips and rounded openings, reproducing the model of the Llotja building.

Whilst the frames of the main openings and the flagstones of the balconies are usually made of Montjuïc stone, the outer facing of the facades of the Barcelona of that period is made of plaster. Stucco was used to coat 98% of the facades of that period, and the most frequent finish, smooth or scraped, is the kind that marks out the ashlar. The predominant colours are ochres and yellows, obtained by colouring the stucco with natural pigments.

The cornice takes up the verticality of the openings and the horizontal-ity of the strips, with ornamental soffits and spirals usually made of terracotta. In the buildings of that first stage we often find another horizontal strip running along the different storeys beneath the hoop. This is an ornamental frieze decorated with stylised vegetal or Greek motifs which, though they are occasionally made of terracotta, are mostly done with sgraffito and add an element of colour to the facade.

Roca i Bros' sketch clearly shows one of the transformation processes with the combination of two iron elements made with two different techniques: cast iron on the railings of the balustrades of the main floor and wrought iron on the railing that crowns the roof, one of the models allowed in the ordinances in force. Though it is not the case with this facade, it was common practice to construct galleries and oriel windows, which also had to be made of iron.<sup>9</sup>

Galleries or oriel windows will only be allowed in squares and streets at least 48 palms (7.312 m) wide; the houses must also have at least three balconies on their facade and the oriel window must be placed in the centre and be built with iron and glass frames.

Although they were frequently used, those architectural elements were considered exceptional. That is because of the taxes set by the council in 1877: whereas a permit for a new building up to two storeys cost 1.55 pesetas, a permit to build a gallery cost 300 pesetas. Moreover, refurbishing and repainting the whole facade cost 25 pesetas, whereas refurbishing and repainting the gallery cost 50 pesetas.

As a model for the facades of the first period we have used the elevation of a house designed by an architect since it provides us with an exceptional drawing quality. However, the leading players in the development of the first stages of the extension were not the architects but the master builders. The Barcelona School of Architecture was founded in 1870 but it was not until 1877 that the first eight graduates completed their studies.

The uniform image of many of the facades of the first period of the extension, which still account for 48% of the total building of the central area,



3. Carrer d'Aragó, 216

is accentuated by the fact that several houses were often built by the same developer. It was common practice to build houses on consecutive plots and of those built before 1900, and still conserved today, we find 202 groups of twin houses, thirty-four groups of three adjacent houses, four of four and three of five. We have also found buildings erected by the same developer on non-consecutive plots. One single owner managed to build up to twenty houses on separate plots; others built sixteen or fourteen; four promoters erected ten, and there are many examples of construction of nine, eight and seven similar houses scattered over the central Barcelona plain.

Concerning the provisions that limited the ornamentation of the facade, it's worth noting that no article conditioned the language to be used, although everyone tried not to affect the regularity of the whole with exaggerated ornaments or ones that were unsuitable for the building type.<sup>10</sup>

Every owner has the right to adopt for the facade of his building the type of architecture which pleases him most, provided that the project is not a whimsical whole with neither relation nor character.

Extravagant adornments will not be allowed on the facades, nor the kind that are not in harmony with the purpose and character of the building.

The influence of neo-classicism on domestic architecture determined the composition rather than the ornamentation.

Classicism continued to be a vital source of ornamental inspiration. There was also a vulgarisation of the classical elements, which until then had been exclusively reserved for unusual or monumental buildings. Ornaments were being used in a far freer manner, with no respect for orders, proportions, scale or the Doric-Ionic-Corinthian sequence.<sup>11</sup>

For the first time, the question of style went beyond the sphere of public architecture and the great mansions and affected ordinary homes. References to an architectural language of the past were prized as a distinctive feature. The “harmony with the purpose and character of the building” referred to in article 31 is understood by the connection made at the time between a particular architectural language and a particular function.

The fact that the classical formulae had been categorised as unique for so long had to some extent worn out the forms. The new society that came into being with the Industrial Revolution had to find an architectural language of its own, in keeping with the new times. The *Renaixença* in Catalonia encouraged reminiscence of the glorious past and a proliferation of decorative elements inspired by the Romanesque and the Gothic. In general, however, the rule was a code of identification of a particular language with the function of the building, a feature of Romanticism, which understood that forms had the capacity to convey sensations. The verticality of the ribs of Gothic architecture, meanwhile, was associated with the uplift of spirituality, and that language was regarded as the most suitable for religious buildings. The classical forms continued to be linked to ideas of authority, power and justice, the most appropriate style for building museums, town halls, theatres and buildings of a cultural or administrative nature. The light, informal and voluptuous character of Muslim and Mudejar architecture suited buildings used for leisure and related to nature or water, such as bullrings, bath houses, pavilions, parks or gardens.

The facades of the Eixample would also be open to the interest aroused by the styles of distant cultures, and gradually incorporated decorative elements inspired by the Byzantine, the Mudejar, the Plateresque or the Egyptian.

That was how the nascent desire for individuality was resolved, while the formal repertory was broadened and its doors opened to the creativity that would lead to the long-awaited new style. That desire to approach other languages and reinterpret the forms of the past would be reflected in the new building regulations.

### In search of originality. The *modernista* diversion

Within the period that begins with the publication of the 1891 building ordinance we can distinguish two types of façade: the first seeks continuity whilst the second marks the beginning of a new model.

To illustrate the first type, applied to the majority of buildings at the time, we have chosen two elevations, one by a master builder and the other by an architect. With respect to the master builder, Carles Bosch i Negre,<sup>12</sup> we know of some ten houses he built in the central sector of the Eixample until 1900, all after the same model; as for the architect, Juli M. Fossas i Martínez (1868-1945),<sup>13</sup> who graduated in 1890, we know that the sketch for the house in Carrer de Muntaner built in 1896 is one of his first projects and that in total he would build twenty-two houses in the heart of the Eixample, all of different types (Illustrations 3, 4 and 5).

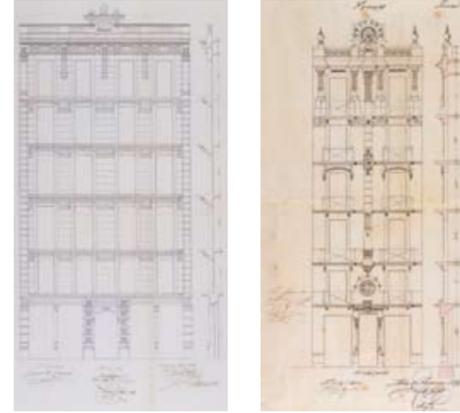
The first change we observe in the sketches is the suppression of the differing heights of the storeys. The 1891 ordinance had already fixed the minimum height regardless of the storey. In streets with widths of 20 metres, 30 metres or 60 metres it was not necessary to increase the height of the lower storeys to ensure light and ventilation. Similarly, it regulated the projection of the balconies and the protruding bodies.<sup>14</sup>

The house may have as many storeys as the owner wishes; but the height of each may not be less than 2.80 m span in houses whose total height is 20 m and 3 m span in the others. For the lower storeys the 4-metre one will be used [...].

In the construction of the floors of balconies, oriel windows or galleries, canopies, uprights, cornices, eaves, projections or any other body jutting out from the alignment of the facade, the maximum projection may not exceed 1/5 of the distance separating that alignment from the line of the street or square parallel to the front of the building. However, the overhang will never be greater than 1.5 metres when it is straight and 2 metres when it is polygonal or circular.

It treats the balconies in the same way as the galleries and all the other protruding bodies and allows them to have polygonal and circular shapes, a variation that made it possible to break up the homogeneity of the facade that was so sought during the earlier period.

A different treatment of the top floor became increasingly common, as the elevations show, with the addition of pilasters, lesenes, columns, coats of arms or soffits. This floor was also differentiated chromatically with paintings in lime, frescos, stuccos or sgraffiti. Special emphasis was placed on the crest; some were already beginning to stand out for their originality, something which the regulations accepted.<sup>15</sup>



4. Carles Bosch, Àngela Patxot Jubert house, Carrer de València, 193, 1894, AMAB  
5. Juli M. Fossas, Carrer de Muntaner 104, 1896, AMAB

[...] the owners may finish the facades of their houses, either in a horizontal line at their height, or placing on them straight or curved pediments, coats of arms or statues, on condition that they are only decorative elements of the facades as a whole [...].

The mostly symmetrical compositional schema would be framed by the ground floor, the corners and the top floor. The new ordinance also contained an article, already approved by the Royal Order of 1879, that allowed for raising the maximum height of buildings to 22 metres in streets over 20 metres wide (article 115).

Of the buildings that were erected until 1900 and that belong to that type, about 1,900 are still conserved in the central area of the Eixample; of them, there are about 1,050 which have five storeys; 600, four storeys, and 250 have fewer than four storeys.

The last decade of the 19th century was one of the high points of the construction of the Eixample. Economic prosperity, the repatriation of capital from Cuba and the Philippines, instability in the countryside and the addition of the eight towns of the plain led to a considerable increase in the population. In just forty years Barcelona had been transformed from a closed, compact city to an expansive metropolis.

The work permits of the last years of the 19th century also included many applications to build a fifth floor, which involved a restructuring of the facade and adaptation to the new taste (Illustrations 6 and 7).



6. Josep Pérez Terraza, Antoni Gibert house, Carrer de Balmes, 90, 1896

The finishes of the facades at that time are similar to the ones of the preceding period, but the use of stucco to imitate rough-hewn ashlar (marking plinth and fillet) was on the rise and stucco was also used to imitate brick.

The architectural elements continued to simulate the colour of stone, whilst the red-ochre colour was introduced to the outer-wall facing to imitate brick. On the ground floor of Carles Bosch's elevation, we see the use of iron columns to free it up and make it more flexible. That was a widespread feature of the time. The introduction of new materials and technologies into construction was slow in some aspects, and they were first applied to free load-bearing walls, which allowed the ground floor to be used for shops. The use of cast iron in the construction of the railings for the balconies also became widespread. A study of the foundry marks of the pillars of the facades of the Eixample shows us that they came mostly from the Mir Brothers foundry in Carrer de l'Hospital; the Escriu Brothers in Carrer del Clot; Romani, Solà and Molins in Hostafrancs; Dionís Escorsa in L'Hospitalet, and the foundry run by Josep Plana i Vilardell in Carrer de Villarroel.

Another of the changes taking place at that moment was the replacement of terracotta or natural stone decorative elements with artificial stone ones, a form of innovation which would have little future, since the companies producing ornamental elements were doomed to disappear.<sup>16</sup> José Estrems' catalogue of artificial stone decorative elements conserved in the City of Barcelona Historical Archive or Juan Vila's in the Historical Archive of the Official Institute of Catalan and Balearic Architects are good examples.



7. Carrer de València, 145 - Casanova, 108

The other type of facade existing at the time, regulated by the same ordinance but which introduced a new model and strove above all for individuality, is the kind we know as *modernista*. Paradoxically, this type was no more than a diversion along the road to the replacement of craft techniques by serial production, which would bring down construction costs. The growing interest in ornamentation would lead to greater recognition of the individual styles of the artists and craftsmen and would, in turn, lead to the creation of even more unusual facades. They thus became the owners' calling cards.

In the Eixample, *modernista* houses that were truly innovative in terms of architectural language are few and far between. They are buildings with a tremendous symbolic weight – most of them designed by architects of international renown – but their numbers are not significant and we shall not be dealing with them here. What we will analyse instead is the new type of facade and the different decorative motifs that adorn the buildings built mostly between 1888 and 1915, which account for 13% of the total conserved in the sector.

Although the facades seek originality, we can establish certain general characteristics. We shall take as a model the sketch by Juli Maria Fossas from 1906<sup>17</sup> and Ramon Frexe Mallofré's<sup>18</sup> from 1908, both for Carrer de Villarroel (Illustrations 8 and 9).

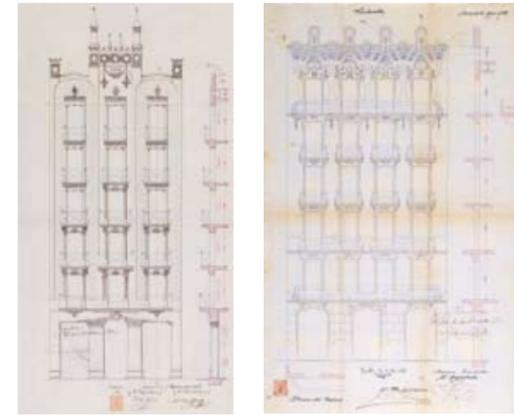
The sketches of that time conceal a good deal of information from us, since they do not include information on materials, finishes and colour.

The crests break the usual linearity and tend to be more varied. Elements inspired by the Gothic (sculpted capitals, spires, arrows, openwork cresting, galleries, ogee arches) and the Baroque (elaborate and dynamic architectural conception, rough-hewn wall facing, broken entablatures, highly ornamented pilasters and columns, rounded shapes on balconies and crests) predominate.

The ground floor ceases to be a merely supporting part and begins to speak the same language as the rest of the facade. The differences between storeys disappear; the whole facade is treated as a single inseparable entity. The frames of the openings take on sinuous shapes. In that way they strive for individuality and to stand out on an increasingly worked wall facing. The railings of the balconies express themselves in the same way; with their bulging shapes they shun the earlier linearity and rigidity.

Most of the wall facings are no longer scraped or smoothed and tend to take on more volume. Rough-hewn treatment predominates, either in natural stone or stucco, as well as floral sgraffiti.

Chromatically, it is a very rich period, with a highly original range of colours made possible by the introduction of artificial pigments. Green is the most frequently-used colour, on both smooth and sgraffito wall facings. Red becomes brighter and the other colours more luminous (Illustration 10).



8. Juli M. Fossas, house in Carrer de Villarroel, 159, 1906, AMAB

9. Ramon Frexe Mallofré, house in Carrer de Villarroel, 105, 1908, AMAB

The ornamentation, confined until then to the frames of the openings and the upper storeys, is now distributed all over the facade. Iconographically, we must single out the appearance of the bestiary, breaking with the usual seriousness and giving the facades a more individual and suggestive character. We find the first examples on the capitals, the springers and the keystones of buildings with Gothic-inspired ornamentation. However, the small zoomorphic details soon break from these constraints and run freely all over the facade. Even the railings join in the fashion, and one blacksmith created a mould with the *Graellsia isabellae*, a kind of huge butterfly – up to 8 cm wing span –, discovered in 1840 by the Catalan naturalist Marià de la Pau Graells at El Escorial (Illustration 11).

Some of the facades conserve the rigidity of the previous period and only approach the new aesthetic through the ornamentation. We also must not forget that some of them are conversions of pre-existing houses.

At that time we can begin to perceive differences between the houses built by the master builders and those built by the architects. For the first time the latter outstrip the former in the construction of buildings in the central part of the Eixample. Thanks to the information provided by the works permits for the houses conserved, we know the names of 106 technicians, forty of whom were master builders and erected 196 houses; the other sixty-six are architects, who built 252. Obviously it was the latter who managed to break away more easily from traditional approaches and try out more personal and daring solutions. The master builders clung to the classical conception of



10. Carrer de la Diputació, 383



11. Detail of the railing of the facade by M. Comas i Thos, Emili Marfà i Artigas house, Carrer d'Ali Bei, 29, 1900



12. Detail of the balcony of the facade by M. Fossas i Pi, Joan Coma i Pujol house, Carrer de Bailèn, 109, 1902



13. Detail of the top floor of the house in Carrer de la Diputació, 369

architecture for many years, although the taste of the time influenced their choices of decorative elements, finishes and colour.

The majority of the decorative elements were designed by the producers of the projects themselves. The high technical skills of the craftsmen of the country enabled the transfer of those original designs to the iron elements, the locks, the woodwork, the sculpture, the glass, the ceramics, the stucco or the sgraffiti.

The turn of the century, as we have said, was a high point in the construction of the Eixample. The period between 1890 and 1905 saw the most important expansion in building and in total over one thousand facades in the central part of the Eixample have been conserved from that time.

That business thrived is indicated by the fact that many master builders and architects went into construction and, as well as being designers, were also developers of a large number of houses. Jeroni Francesc Granell i Manresa was also the developer of five houses in the central area built between 1900 and 1902; Eduard Mercader i Sacanella was the designer and owner of six houses built between 1899 and 1903, and the architect Adolf Ruiz i Casamitjana built ten between 1899 and 1907. To those works we must add the ones they designed on other people's commissions.

The advertisements for industrialists and craftsmen that appear in the bulletins of the Catalan Architects Association from 1899 are highly significant in terms of the quality of the services offered by painters, stuccoers, ceramists, blacksmiths and locksmiths. The smithies began to work industrially,

and could customise railings by doubling the bars formed by plain or twisted strips, and adding rosettes and brass or copper knobs to taste. The foundries produced pillars, columns and beams, and at the same time engaged in creating the moulds for original designs for rails (Illustrations 12 and 13).

While the industry was tending towards building in artificial stone, many varieties of natural stone were on offer. As well as the stone extracted from the quarries of Montjuïc, there were others from Figueres, Manresa, Calafell, Murcia, Alicante, Roda, Vinaixa and Els Omellons; stones of different formation and colouring that offered a wide range of tones and textures.

The industrialists who engaged in the sale of pigments in bulk broadened their palette of colours to a range of over 300. The new artificial pigments, responsible for the outburst of colour on the facades, were added to the limestone and sandstone paste which the stuccoers continued to prepare on site, in the traditional way.

The sgraffiti of the wall facing of the facade may be one of the most characteristic finishes of the period and one of the most defining elements of the *modernista* facades of the Barcelona Eixample. The sketches the stuccoers produced as preliminary models were sometimes designed by the architects themselves, but often starting from models of fabrics from the 17th and 18th centuries. The contrasting tones they usually combined (greens, whites, yellows, reds) produced a brief but exceptional splash of colour (Illustration 14).

## Epilogue

In the first decade of the 20th century people were aware of the need for a new aesthetic and a new programme. *Modernisme* was regarded as a decoration for facades rather than as an architectural language. Weariness with the exuberance of materials, finishes and colours aroused different reactions.

The facades gradually returned to the use of classical elements, which had never been completely abandoned, and once again drew inspiration from earlier styles, such as Renaissance or Baroque, or from Central European currents, such as Viennese Secessionism.

In addition to the models for facades in those styles, the classicist language inspired the *Noucentista* facades, which would usher in a new chapter in the history of the landscape of the Barcelona Eixample.



14. Josep Pérez Terraza, Jaume Sahís house, Carrer Bruc 127, 1900

## NOTES

1. The materials I have used in the writing of this article come from the historical study "Els colors de l'Eixample" which I did for Barcelona City Council Municipal Urban Landscape Institute between 1989 and 1991. The study was done by a group of technicians from different disciplines directed by the architect Joan Casadevall i Serra and analysed the use of colour on the facades of the Eixample in order to help guide restoration work. The statistical data and the percentages I shall be referring to are the result of that field work, which involved the drafting of a file for each facade of the central area marked out by the ring roads, Diagonal, Carrer del Comte d'Urgell and Passeig de Sant Joan.
2. AHCB (City of Barcelona Historical Archive), *Llibre d'acords*, 1826, proposal by J. Mas i Vila for facades for Carrer de Ferran.
3. AHCB, *Llibre d'acords*, 2nd quarter 1830, regulation of colour, by J. Mas i Vila.
4. Joan MOLET, "L'assimilació dels historicismes en l'arquitectura domèstica del segle XIX. De la dependència formal a la consecució d'un estil propi", *Revista d'Art* (Barcelona), 1, 2001.
5. Joaquín SABATÉ I BEL, *El proyecto de la calle sin nombre: los reglamentos urbanos de la edificación. París-Barcelona*, Barcelona, Fundación Caja de Arquitectos, 1999, pp. 291-293. Agustín CÓCOLA GANT "El modelo ensanche, Pere Falqués y la casa Rocamora. O sobre la propiedad, ordenanzas y elementos estructurales en Barcelona a finales del siglo XIX", *Espais interiors. Casa i art des del segle XVIII al XXI*, Barcelona, Universitat de Barcelona, Publicacions i Edicions, 2005, p. 4.
6. AMAB (Barcelona Municipal Administrative Archive), Works files 1833 bis C. House for Gran Via de les Corts Catalanes, 586, J. Roca and Bros (1867). Developer: M. Xiqués.
7. *Ordenanzas Municipales de Barcelona de 1856*, Ajuntament de Barcelona, Imprenta Nueva de Jaime Jesús y Ramón Villegas, 1857. Articles 20 and 23.
8. *Ordenanzas Municipales de 1856*. Articles 17 and 32.
9. *Ordenanzas Municipales de 1856*. Article 25.

10. *Ordenanzas Municipales de 1856*. Articles 30 and 31.
11. MOLET, "L'assimilació dels...", pp. 219 and 220.
12. AMAB, Work permits, file 5362 of 1894. House in Carrer de València, 193, by the master builder Carles Bosch.
13. AMAB, Work permits, file 6439 of 1894. House in Carrer de Muntaner, 104, by the architect Juli M. Fossas.
14. *Ordenanzas Municipales de Barcelona de 1891*. Articles 119 and 126.
15. *Ordenanzas Municipales de Barcelona de 1891*. Article 125.
16. G. DE TOMMASI and F. FATIGUSO, "Buildings of beginning of '900 between tradition and innovation: From the art of building in the treatises to building practises of handbooks", *Proceedings of the First International Congress on Construction History*, Madrid, S. Huerta, 2003, p. 759, and J. PEÑA and R. PELTA, "Nuevos materiales y espacio doméstico", *Espais interiors. Casa i art des del segle XVIII al XXI*, Barcelona, Universitat de Barcelona, Publicacions i Edicions, 2005, p. 197.
17. AMAB, File 10898 from 1906. House in Carrer de Villarroel, 159, by Juli M. Fossas i Martínez from 1906.
18. AMAB, File 7672 from 1908. House in Carrer de Villarroel, 105, by Ramon Frexe i Mallofré.

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## EXHIBITION

The exhibition, programmed as one of the events of Cerdà Year, is part of the MUHBA research project into the origins of Barcelona modernity in different formats of work, public programming and consolidation of the results in the form of documents, publications, exhibitions and urban itineraries.

*Cerdà and Barcelona: the first metropolis, 1853-1897* is based on the course "Reconsidering Cerdà. Theory and practice in the modernisation of Barcelona", given by Ramon Grau, Marina López and Glòria Santa-Maria, from 18 February to 10 May 2009 at the Barcelona AHCB History Seminar.

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