

## THE CITY AND THE CLOCK

### Public time perception in Vienna, from 1850 to 1914

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For some years now, the variety of urban time structures and their effects on urban development have been the focus of city planners, scientists and politicians. How are the temporal rhythms of a metropolis to be understood? Which consequences arose for the social and spatial developments of the city? As 'Chrono Urbanistik' emerged as a new research topic, the management of temporal conflicts among different social groups, as well as active urban time politics have increasingly found entrance to planning and administrative authorities.<sup>1</sup> Thereby, the main objective is the constant resolution of established rhythms and time structures everywhere. One speaks of the 'De-Synchronisation' phenomenon in the cities and the diversification of formerly coherent time relations.

The following explication takes a look backwards. Using Vienna as an example, it will demonstrate exactly how the temporal adjustment and synchronisation of the city developed, which today has since disintegrated. How did the establishment of urban time structures, with the help of public clocks from 1850 up to the First World War begin? How do urban, national, and global synchronisation movements function? And what effects did all this have on everyday life in the city? As the German historian Jürgen Osterhammel explains in his analysis of the nineteenth century, the reformation and a new perception of time were constitutive for this era.<sup>2</sup> For the first time, a worldwide standardization of time measurement occurred. The incalculable variety of local and environment-engaged time cultures were put in order. They were edged out and overlaid by a newly introduced world time. European society found an up until then unknown 'Chronometrisierung'. Clocks became omnipresent and with them the obedience of their owners and users was juxtaposed with a mechanical time dictation. The clock became, as Lewis Mumford ascertained in his famous dictum, the most important apparatus of the industrial age.<sup>3</sup> It became the main vehicle for the development of western civilization, the weapon of modernization and the mighty symbol for progress and modernity.

Above all, in middle-class circles, the use of a chronometer was soon a natural practice. Using the available time as efficiently as possible and not wasting it, soon became a matter of respectability and virtue. Pocket watches were a widely used phenomenon and acted as prestigious status symbols.

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## NOTES

<sup>1</sup> See D. Henckel, B. Grabow, and H. Kunert-Schroth, *Zeitstrukturen und Stadtentwicklung* (Stuttgart, 1989); U. Mückenberger (ed.), *Zeiten der Stadt: Reflexionen und Materialien zu einem neuen gesellschaftlichen Gestaltungsfeld* (Bremen, 2000); H. Rosa, *Beschleunigung: Die Veränderung der Zeitstrukturen in der Moderne* (Frankfurt a. Main, 2005); U. Mückenberger, D. Läßle, and J. Oßenbrügge (eds.), *Zeiten und Räume der Stadt: Theorie und Praxis* (Opladen, Farmington Hills/Mich, 2010).

<sup>2</sup> J. Osterhammel, *Die Verwandlung der Welt: Eine Geschichte des 19. Jahrhunderts* (Munich, 2011), 118–126.

<sup>3</sup> L. Mumford, *Technics and Civilization* (New York, 1934), 14.

In Vienna, Emperor Joseph II had approved in 1789 for the first time, the establishment of a pocket watch factory in a former Piaristenkloster in the suburb of Vienna (Wieden). Just one hundred years later, in 1880, watches were introduced as confirmation presents.

In a factory work environment, the clock, which has since been examined in detail, played an increasingly important role,<sup>4</sup> as well as it did as in offices, schools and within all means of transportation following a timetable. All this was a manifestation of a new time discipline, in which minute precision was the most valued advancement. The synchronisation of all urban activity became the progress paradigm of the modern age.

At the same time, the number of the public clocks continuously increased. Progressively complex organised cities<sup>5</sup> rose to become the forerunners of public time announcement. In them, a time regime was established that was more uniform than the time experiences of an agricultural life-style closer to nature. The 'acceleration and de-naturalization' of time experience found a place in many social classes.

As one of the first evaluators, the German sociologist Georg Simmel, famous explorer of the urban disposition, scientifically analyzed that metropolitan life would be inseparably connected with the factors of punctuality and calculability. In his lecture: *Die Großstädte und das Geistesleben* in 1903 he stated: 'The modern mind has increasingly become a counting mind. ... thus the technology of urban life is not at all conceivable without all activities and interrelations being arranged in an extremely punctual, firm and non-subjective time pattern.'<sup>6</sup>

Nevertheless, the more concrete investigation of the connections insinuated here, is excessively incomplete from today's view. While countless studies have been dedicated to the big cultural-historical changes of time measurement and time perception,<sup>7</sup> the specifically urban context with its forced 'publication' of the time has still gained little attention in historical sciences, in the meantime. Even an extensive manual about the city, which was published some time ago, only mentioned the topic of 'Time and the City' briefly.<sup>8</sup>

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<sup>4</sup> See U. Merle, *Tempo! Tempo!: Die Industrialisierung der Zeit im 19. Jahrhundert*, in I. A. Jenzen (ed.), *Die Geschichte der Uhr und ihres Gebrauches* (Marburg, 1989), 161-217; H. Lackner, „Das alte System der Großväter“ und die neue Zeit: Zeitverdichtung und Beschleunigung während der Industrialisierung, in W. Katzinger (ed.), *Zeitbegriff, Zeitmessung und Zeitverständnis im städtischen Kontext* (Linz, 2002), 81–105.

<sup>5</sup> See, e.g., F. Lenger, *Metropolen der Moderne: Eine europäische Stadtgeschichte seit 1850* (Munich, 2013).

<sup>6</sup> G. Simmel, *Die Großstädte und das Geistesleben* (Frankfurt a. Main, 2006), 15, 17 (EA 1903).

<sup>7</sup> See, e.g., N. Elias, *Über die Zeit: Arbeiten zur Wissenssoziologie II* (Frankfurt a. Main, 1988); G. J. Whitrow, *Die Erfindung der Zeit* (Hamburg, 1991); G. Dohrn-van Rossum, *Geschichte der Stunde: Uhren und moderne Zeitordnungen* (Munich, 1992); W. Müller-Funk (ed.), *Zeit: Mythos – Phantom – Realität* (Vienna, New York, 2000); E. Chvojka, A. Schwarcz, and K. Thien (eds.), *Zeit und Geschichte: Kulturgeschichtliche Perspektiven* (Vienna, Munich, 2002); P. Borscheid, *Das Tempo-Virus: Eine Kulturgeschichte der Beschleunigung* (Frankfurt a. Main, New York, 2004); A. Assmann, *Ist die Zeit aus den Fugen? Aufstieg und Fall des Zeitregimes der Moderne* (Munich, 2013).

<sup>8</sup> J. Wietschorke, 'Anthropologie der Stadt: Konzepte und Perspektiven', in Harald A. Mieg, and Christoph Heyl (ed.s), *Stadt: Ein interdisziplinäres Handbuch* (Stuttgart, Weimar, 2013), 213.

Up until now, few works have focused on developments from the fourteenth to eighteenth century. Only some have incorporated any development since the nineteenth century.<sup>9</sup> It is the aim of the following, to close these research gaps, using Vienna as an example. The history of the 'Chronometrisierung' of public spaces in Vienna will be introduced based on already existing preliminary works.<sup>10</sup> On one hand the focus will be on the external 'Chronometrisierung', by which I mean the visible compression of the infrastructure of time and the development of different clock types thus caused by it. Spatial architectural and design-aspects of history will be demonstrated. Technical connections, like the search for the ideal drive technology, as well as questions about the political-representative function of public clocks will be discussed. On the other hand, closely intertwined questions of the internal 'Chronometrisierung' will also be analyzed, social, psychological and mental aspects of the perception of time and their placement in the standardization phenomena on a local and global scale.

## EARLY TIME CENTRES

Since the fourteenth century – with the implementation of the mechanical clock – public clocks were popular in all bigger cities. Originating in Milan (1336), they soon appeared in other northern Italian towns, then in Bruges, London, Prague, Paris and, finally, all over every country in all of Europe. In the area that is today known as Austria, the first mechanical clock was built in Tulln. Vienna followed in 1415.<sup>11</sup>

The era of acceleration began with the clocks. They were both the cause and the symptom of a new time perception, in which rationality and calculability played an increasingly important role. The

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<sup>9</sup> See H.-W. Klünner, 'Normaluhren: Es kam auf die Sekunde an', in *Straßenmöbel in Berlin* (Berlin, 1983), 38–45; Jenzen, *Die Geschichte der Uhr*; Katzinger, *Zeitbegriff, Zeitmessung und Zeitverständnis*; W. Kaschuba, *Die Überwindung der Distanz: Zeit und Raum in der europäischen Moderne* (Frankfurt a. Main, 2004), 36–42; M. H. Geyer, '"Die Gleichzeitigkeit des Ungleichzeitigen": Zeitsemantik und die Suche nach Gegenwart in der Weimarer Republik', in W. Hardtwig (ed.), *Ordnungen in der Krise: Zur politischen Kulturgeschichte Deutschlands 1900–1933* (Munich, 2007), 165–187.

<sup>10</sup> K. Uhlirz, 'Zur Geschichte der Uhren in Wien (1380–1699)', in *Blätter des Vereins für Landeskunde von Niederösterreich* 25 (1891), 177–205; L. Hammer, 'Die öffentlichen Uhren Wiens', in R. Tillmann (ed.), *Hundert Jahre Wiener Stadtbauamt 1835–1935* (Vienna, 1935), 289–295; R. Rotenberg, *Time and Order in Metropolitan Vienna: A Seizure of Schedules* (Washington, London, 1992); E. Chvojka (ed.), *Dem Glücklichen schlägt keine Stunde ... oder Wie die Vorstellung von der „Wiener Gemütlichkeit“ entstand* (Vienna, 2001); E. Chvojka, 'Zeit der Städter, Zeit der Bauern: Ein Fallbeispiel für die gegenseitige Wahrnehmung der Zeitordnungen und Zeitmentalitäten von Städtern und Landbewohnern im Wien des frühen 18. Jahrhunderts', in Chvojka, Schwarcz, and Thien, *Zeit und Geschichte*, 192–202; P. Payer, 'Zeit-Zeugen: Zur Geschichte der Wiener Würfeluhr', in: Lichterloh Kunsthandel (ed.), *Normalzeit: Ein österreichisches Kunstprojekt rund um das Wiener Wahrzeichen Würfeluhr* (Vienna, 2011), 121–147.

<sup>11</sup> Chvojka, *Dem Glücklichen*, 18–19.

concept of speed originated, according to historian Peter Borscheid, not exactly within the cities, but rather in between them, due to the economic motivation to overcome distances at a faster pace.<sup>12</sup>

The era of the sundials and water meters, which had dominated up until then, came to an end. Clocks, positioned on towers visible from far away and, –combined with a signal bell, audible from far away, developed to become crucial metronomes of everyday life. As instruments of a new public time regime, they coordinated the everyday life of local groups, as well as their different power interests. Whereby, in the end, power itself was newly categorised as a symbolic rule over time.<sup>13</sup>

Until the eighteenth century, clocks were mostly on steeples. Religion and the church determined the public time order. During the course of the nineteenth century, clocks were increasingly installed on secular buildings and situated as solitary pieces of urban furniture.

In Vienna, the goal of the municipal clock offensive was at first, to increase and improve the existing church clocks. The so-called 'transparent clocks' whose dial-plates were translucent and could be lit up at night, were from then on preferentially installed. Already in 1862 the Schottenkirche, situated on the Freyung, had received such a clock, two years later the Paulanerkirche in Vienna (Wieden) followed.<sup>14</sup>

In December of 1864 the city council made a proclamation, which decreed that all eight suburban districts were to be equipped with at least one clock, for which a budget of 9,000 guilders was to be set aside.<sup>15</sup> A plan was implemented in the following years and was to be continued afterwards. Nevertheless, the most important time centre of the deeply Catholic city of Vienna, was St. Stephen's Cathedral, which, during the centuries had received several clocks of various designs:<sup>16</sup>

A mechanical striking clock, built into the southern tower in 1415, had been renewed several times during later centuries and since 1699 was equipped with four dials and, for the first time, with minute hands. The clock made by Jacob Joachim Oberkircher had a running time of eight to twelve hours. The whole clock was removed during the rebuilding of the spire.

Two sundials: The first one was affixed in 1451, presumably by the Viennese astronomer and mathematician Georg von Peurbach (1423–1461), to the southern buttress of the choir pit (there it remains to this day as the oldest sundial in Vienna); the second one is positioned directly under the watchman's room, who kept watch over the city in case of fire.

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<sup>12</sup> Borscheid, *Das Tempo-Virus*, 62.

<sup>13</sup> See Kaschuba, *Die Überwindung*, 41.

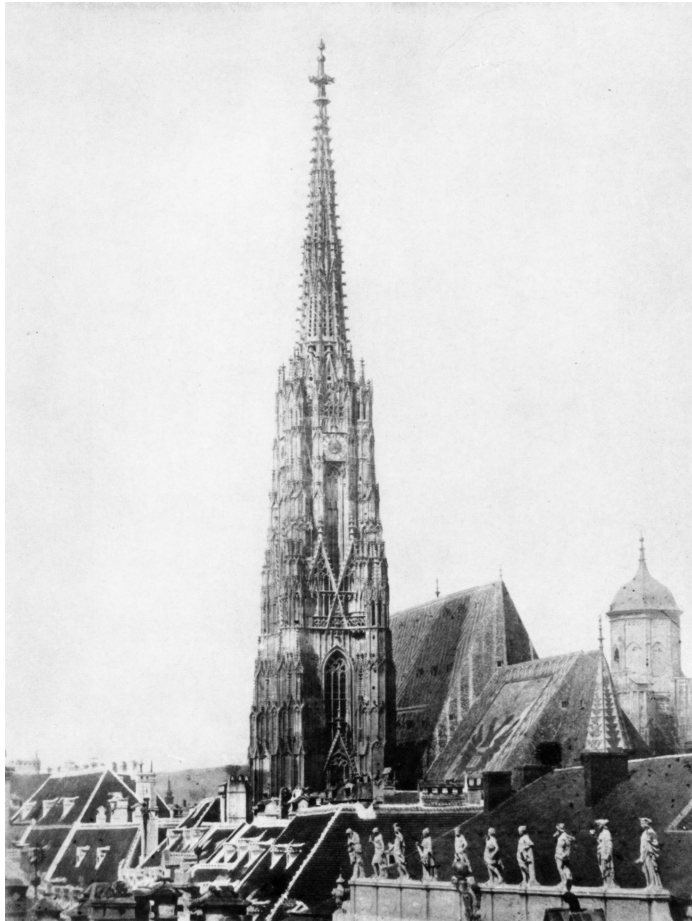
<sup>14</sup> *Die Presse*, 4 Sep. 1862, 4; 11 Oct. 1864, 9. Also see K. Wildner, *Die transparente Uhr* (Vienna, 1884/85).

<sup>15</sup> *Neue Freie Presse*, 3 Dec. 1864, 4.

<sup>16</sup> See Verein zur Erhaltung des Stephansdoms (ed.), *Unser Stephansdom* (85) 2009, 1–4.

A numeral clock and a customary clock with hands on the western facade, above the main entrance. Both clocks were made by Wenzel Schönberger and were put into operation in the summer of 1863.<sup>17</sup>

And, finally, there was also a clock inside the cathedral, from 1710 to the first half of the nineteenth century. It was situated in the west loft and with her dial faced the altar.



*Figure 1: Clock in the southern tower of St. Stephen's Cathedral, circa 1858  
(Source: Author's collection)*

The most popular of all these clocks was the one in the tower. Its dial was four meters high, 3.5 meters wide. The length of the hour hand stretched to two meters. The dismantling of this mighty time indicator of the church occurred in the 1860s and was greatly regretted by the city's residents. Many years later journalist August Silberstein remembered melancholically:

From this tower a clock used to look out far in to the country and struck the hours with a succinct tone for times of happiness and grief. The clock, whose hands had stretched for more than one fathom, but from below had seemed only two spans long, was near the gallery of the tower; with

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<sup>17</sup> See *Die Presse*, 10 Jan. 1863, 4; 2 Aug. 1863, 4.

the last restoration of the singular gables and the spire it had to be removed, because, unfortunately, in the plans of the old masters her placement was not foreseen.<sup>18</sup>

The secular counterpart to St. Stephen's Cathedral, the Hofburg (Imperial Palace), had received a large astronomical clock in the Amalienstrasse (wing of Amalie) in the seventeenth century. The so-called 'Amalienuhr' (clock of Amalie) advanced straight away to be a much-visited place of interest. At the end of the century a sundial had been added, which can still be seen today. In 1863 the astronomical clock was replaced by a clock with hands, the globe depicting the phases of the moon was the only part that was preserved.<sup>19</sup> This second time-centre effectively symbolised the monarchic claim of rulership over time in the city. This also expressed itself in the palace Schönbrunn, the summer residence of Emperor Franz Joseph and his family. Four clocks pointing in every direction were already installed in the eighteenth century.

Middle-class buildings represented the third time-centre: The Vienna City Hall, the Niederösterreichisches Landhaus (seat of government of Lower Austria) and the Schranne, the oldest courthouse of the city. Also in the new city hall, built in the Ringstraße in the years from 1872 to 1883, a clock was installed quite prominently in the upper area of the main tower which is almost one hundred meters high. With its big dials, which were facing in all four directions, it impressively represented the power of the liberal bourgeoisie. The construction was similar to St. Stephen's Cathedral and externally symbolised the 'transfer of the sacred', which meant the crossing of formerly clerical functions to secular centres of power everywhere in Europe during the nineteenth century. It was not by chance that the draft of Friedrich Schmidt had won the competition. Its design had the highest tower and therefore intended to explicitly compete with the cathedral.<sup>20</sup> Thus the clock of the city hall succeeded the dismantled clock of St. Stephen's Cathedral.

The three aforementioned political spheres of influence determined the Viennese time order for many centuries. Through the announcement of time they defined themselves and marked their spheres of influence in the city.

From the middle of the nineteenth century, new and important time authorities appeared: science and economics. In 1855 the old university established by the Jesuits attached a clock, whose dial was directed towards the crowded Universitätsplatz (university square). In 1901 exactly vis à vis and adjacent to the main entrance of the Akademie der Wissenschaften (academy of the sciences), the

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<sup>18</sup> A. Silberstein, *Die Kaiserstadt am Donaustrand: Wien und die Wiener in Tag- und Nachtbildern* (Vienna, 1873), 49.

<sup>19</sup> *Das Vaterland*, 29 Apr. 1863.

<sup>20</sup> See S. Spevak, *Neues Wiener Rathaus und Stephansdom: Divergenz und Kongruenz in Politik und Repräsentation (1870–1950)*, in S. Spevak, S. Claudine Pils, M. Scheutz, and C. Sonnlechner (ed.s), *Rathäuser als multifunktionale Räume der Repräsentation, der Parteiuungen und des Geheimnisses* (Innsbruck, Vienna, Bozen, 2012), 271–314.

so-called 'Treitluhr' was installed, named after Joseph Treitl (1804–1895), businessman, city counselor, and generous patron of the sciences.

This led to the emergence of public spaces, whose time management would have far-reaching effects on all other areas such as the railway stations. As the historian Wolfgang Schivelbusch has pointed out, the railway generated not only completely new images of space, but in particular, new images of time.<sup>21</sup> The up to then dominant subjective and local time restraints were eliminated by the road traffic. Generally correct, national time standards took their place, and with them a mechanical-linear perception of time. Its symbol was the clock, which was part of the basic equipment of every railway station from the beginning.

The terminal stations established in Vienna between 1858 and 1874 were equipped with large clocks which were visible from afar. These were either placed on the outer facade of the station hall, and directly above the main entrance (north railway station, east railway station, northwest railway station), or in the anteroom to the foyer (west railway station). In the railway station of the Franz-Josefs-Train, the towers flanking the main hall had clocks with several dials. Only the south railway station had no outer clock, but inside had clocks in the counter area and the departure hall.

Proceeding from this basic pattern, the Viennese time infrastructure was further condensed by the end of nineteenth century. Besides the churches and the important fire department headquarters other public and private buildings were soon provided with time announcement instruments: the administrative buildings in the districts, schools, barracks, hospitals, warehouses, covered markets, postal and telegraph offices, hotels and commercial houses. Situated on towers and facades, all these clocks were integrated into the architecture and became important time-centres in their respective districts. Generally, most of the clocks were concentrated in the central-urban areas. Farther away, in the suburbs, few clocks were installed.

In the 1860s, clocks were put up directly in the street area for the first time. They moved from a high up position, directly in to the traffic circulation and on to the pavement of representative and very popular streets. In February of 1866 the Viennese city council received the approval to establish six announcement pavilions in the Ringstraße.<sup>22</sup> They would serve as stalls that sold newspapers, theatre tickets or flowers and next to the billboards, and they would have a clock which could be lit up at night. During the following years such kiosks were established as octagonal iron pavilions with richly decorated roof constructions.

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<sup>21</sup> W. Schivelbusch, *Geschichte der Eisenbahnreise: Zur Industrialisierung von Raum und Zeit im 19. Jahrhundert* (Frankfurt a. Main, 1989), 35–45. Also see R. Roth, *Das Jahrhundert der Eisenbahn: Die Herrschaft über Raum und Zeit 1800–1914* (Sigmaringen, 2005); G. Dinobobl, *System Eisenbahn: 'Gedanken zur Struktur(ierung) der Eisenbahn'*, in A. Kuisle (ed.), *Kohle und Dampf* (Linz, 2006), 189–201.

<sup>22</sup> *Das Vaterland*, 25 Feb. 1866, 3; *Neue Freie Presse*, 25 Feb. 1866, 5.



### 'STÄNDERUHREN' (column clocks)

Public clocks, as pieces of urban furniture, several meters high, solitaire and detached from any additional functions, also appeared in the streets of Vienna from the middle of the 1860s. The so-called 'column clocks' changed their drive technologies several times during the decades: from purely mechanical, to pneumatical, to clocks run electrically and autodynamically.

The first 'column clock' was exhibited provisionally in September 1865 at a court of the imperial palace. It had been constructed by the clockmaker Ernst Resch and was made of a four-meter-high iron candelabra, which carried a clock surrounded by three dials. The dials were white and lit at night by a gas flame, and the numbers were black.<sup>23</sup> The drive occurred through a small master clock which was in the base.

After the successful test run it was to be put up in the Praterstraße in Vienna (Leopoldstadt). Here it would serve the numerous passers-by and road users, because the street was one of the most frequented and therefore the most prestigious traffic route in the city. In 1873, when the street acted as a main route to the world exhibition in the Viennese Prater, the clock also indicated the time to the numerous visitors. However, disturbances and inaccuracies became apparent, due to the vibration caused by the streetcars passing nearby. Hence, after long discussions it was dismantled in 1906 and moved to a closed marketplace where it stayed for several decades.<sup>24</sup>

New technologies were tried out, initially using air pressure as the power source. Designs based on the pneumatic principle had been discussed up to then for the dispatch of postal pieces (letter shoot) and even as a means for funeral transportation. Now public clocks were to be powered by it.

Since 1864 telegraph engineer Carl Albert Mayrhofer had been the main advocate for the installation of pneumatic clocks. He founded a support committee with prominent advocates and announced his arguments:

The way the public clocks in Vienna tell time is no longer viable. They differ by many minutes, by quarter- hours and more often on dials ... situated quite near each other. The more the traffic life of a city develops, the more improved punctuality and cooperation between the different elements is required, and the need for reliable corresponding time becomes increasingly important in all districts of the city. ... The saying, "time is money" is probably recognised as a fundamental truth by every

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<sup>23</sup> *Die Presse*, 9 Sep. 1865, 3.

<sup>24</sup> *Die Gemeinde-Verwaltung der Reichshaupt- und Residenzstadt Wien im Jahr 1906: Bericht des Bürgermeisters Dr. Karl Lueger* (Vienna, 1908), 164.

educated person. One may also say that, without a doubt, the frequent or infrequent use of a timekeeper in a country can be an indicator for the level of education of the population.<sup>25</sup>

The essence of his project was the establishment of a central Normaluhr (main clock) which was connected to the K. K. Observatory via telegraph circuit and therefore always had the exact time. From this apparatus, several clocks distributed within the city were to be run using pipes and regular air pressure impulses.

On the 24th of February 1877, at twelve o'clock, the first pneumatic clock, installed on the Schottenring, was solemnly put into operation in presence of the Viennese vice-mayor Julius Newald and a number of invited guests. It had three dials, was flanked by three gas candelabras, and was mounted on a shelter for guards. At the same time two other clocks were put into operation on Herrengasse and on Wipplingerstraße in front of Mayerhofer's head office. The design of the new clock system was made by Victor Popp and the well-known clockmaker Ernst Resch. The expectations were high as the 'Neue Freie Presse' reported:

Since yesterday, Vienna has become richer regarding equipment, which accommodates a long-felt need. It means so much, as the happy solution to a problem, which has become the object of the keenest attempts of mechanics for many years, as well as a goal which the cities of London, Paris, Berlin etc. have not achieved despite all efforts: they are in full correspondence with each other, regardless of the distance, these public and private clocks are showing the exact astronomical time.<sup>26</sup>

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<sup>25</sup> Quoted after J. Rathan-Haefelen, *Denkschrift an den wohlloblichen Gemeinderath der Reichshaupt- und Residenzstadt Wien, anlässlich der am 24. Februar d. J. ablaufenden Probezeit der pneumatischen Uhren in Wien* (Vienna, 1878), 11, 16.

<sup>26</sup> *Neue Freie Presse*, 25 Feb., 1877, 6.



Figure 2: Pneumatically run clock at Schottenring, 1898  
(Source: Author's collection)

Vienna was, as one noted proudly, the first city in the world to have installed public clocks with a pneumatic drive, even before Paris, for example, which followed in 1879.<sup>27</sup> A noteworthy event which was mentioned in the specialised press and in international media.<sup>28</sup>

The fact that competition between the metropolises was also evident in this sector, was also keenly noticed by the following visitors, among them Emperor Franz Joseph who expressed himself appreciatively about the new invention in March of the same year. He was pleased that all the necessary elements of this clock system were constructed in Vienna. Hopes were high that an important step had been made for the improvement of the public time announcement. Which is why, still in the same year, more pneumatic clocks were erected.<sup>29</sup> But their expectations were not met. Soon it became clear that all of these clocks had problems with precision. Mayrhofer's contract with the municipality was not extended and the project was classified as failed.

Improved drive technologies were searched for. The ambitious engineer and inventor Friedrich von Lössl (1817–1907) had a new idea. He introduced so-called autodynamic clocks, which used the

<sup>27</sup> E. Bruton, *The History of Clocks and Watches* (New York, 1989), 172.

<sup>28</sup> See 'Pneumatic Town Clocks in Vienna: Designed by A. C. Mayrhofer', in: *Scientific American Supplement* (84) 1877, 1331; 'Pneumatische Uhren', in *Dinglers Polytechnisches Journal* (233) 1879, 256–7.

<sup>29</sup> Rathen-Haefelen, *Denkschrift*, 21, 27–8.

variations of atmospheric pressure and air temperature as an energy source. The smallest variations between day and night were enough to provide the clock with energy.<sup>30</sup>

The first autodynamic clock was erected on the 18th of September 1880 in in the Wiener Cottagegarten (today Türkenschanzpark), and more followed in the City Park (1881) and in the Prater (1883). Particularly the latter became a much-visited destination which caused persistent 'curiosity and interest'. A year after its installation one was astonished that "up until now her four big dials have perpetually shown the correct 'Wiener Zeit' (Viennese time)".<sup>31</sup>

Lössl's workshop was in Vienna (Währing), Anastasius-Grün-Gasse 35 where in the following years new clocks were produced and positioned in Vienna in the Währinger Gürtel (1888) and in the Hernalser Hauptstraße (1891).<sup>32</sup> All the clocks fascinated onlookers with its four (!) dials, and, above all, its accuracy.

In 1904 the clock manufacturer Alfons Schauer took over the rights for the autodynamic clock-system from the already aged Lössl. Furthermore, he built models following Lössl's patent and was allowed to put them up in the children's playground in the City Park (1904) and in the Maria-Josefa Park (1905, today Schweizergarten). In a letter, he gladly reported to Lössl about the risen interest from the city of Vienna: 'The autodynamic clocks have now generated a lot of interest within the City Council in general. ... The clocks have been tested for Vienna and I believe, it would have been a pity if this system would have been forgotten without the correct amount of appreciation.'<sup>33</sup>

In 1905 the clock in the Hernalser Hauptstraße was bought by the city of Vienna.<sup>34</sup> And other cities became interested in Lössl's invention too. His clocks – probably not more than fourteen all together – were exported to Linz, Paris, Hamburg and Marburg.

A new propulsion method prevented the final breakthrough of the relatively luxurious and therefore expensive autodynamic clocks: electricity. The increased spreading of electric clocks had, like Lössl's creation, the advantage of never needing to be wound up. The electric clocks, however, were to be produced in a less expensive way. Thus, Lössl's invention had come too late and had been overtaken by technical progress.

However, for the time being other clocks with a customary drive technology were built. The famous clock factory Schauer, was among the pioneers in this area. In 1839, founded by the engineer Emil

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<sup>30</sup> For Lössl's invention and biography see Josef H. Schröer, *Die autodynamische Uhr des Friedrich Ritter von Lössl, die Uhr mit selbsttätigem Luftdruckaufzug* (Georgsmarienhütte, 2003); M. Gschwandtner, *Friedrich Ritter von Lössl (1817–1907): Unermüdlicher Technik-Pionier, Visionär, Tüftler und U(h)rgroßvater* (Munich, 2009).

<sup>31</sup> 'v. Loessl's selbstthätiger atmosphärischer Motor und autodynamische Uhr', in *Wochenschrift des Österreichischen Ingenieur- und Architekten-Vereines* (14) 1884, 123.

<sup>32</sup> Also see Archive of the Technical Museum of Vienna, *Nachlass Friedrich von Lössl: Biografische Notizen über technische Erlebnisse* (BPA-015368). In 1897 the clock of the Währinger Gürtel was transferred to Bad Aussee, Lössl's age residence, where it stands, indeed, reequipped on electric drive till this day.

<sup>33</sup> Letter from 21.8.1904. Quoted after *ibid.*, 21.

<sup>34</sup> *Die Gemeinde-Verwaltung der Reichshaupt- und Residenzstadt Wien im Jahr 1905: Bericht des Bürgermeisters Dr. Karl Lueger* (Vienna, 1907), 190.

Schauer in Vienna (Neubau), it specialised in the production of big clocks. Countless churches, city halls, schools, barracks, railway stations and factories were equipped with them, many of which were in Vienna. The expanding city was one of the most important key markets for the company. Under the direction of Emil Schauer II (from 1866) and his successor Alfons Schauer (from 1898) the enterprise rose to one of the biggest clock factories of Austria-Hungary.<sup>35</sup>

In the middle of the 1880s the company developed two noteworthy, mechanically run clocks which were put up in the Naschmarkt (1895) and in the Währinger Gürtel in front of the Volksoper (national opera house, 1898). Both models were of the same construction, more than ten meters high and contained in their shaft a mechanical master clock, which ran the three dials, each with a diameter of 125 centimeters.

Public clocks of such size were a novelty in Vienna. Above all, the clock at the Naschmarkt was a real 'eye-catcher' – for chronologically precise regulated events in the most important market of the city had been a long-demanded need. As a special place of interest, the clock often was illustrated on various graphics, photographs and postcards.

The time of such mechanically run monumental clocks had already faded out by the end of the nineteenth century. The future belonged to the electric clock. Their establishment was also accelerated by the Schauer company, which had installed the first electrically run public clock of Vienna in the Arthaberbrunnen (Arthaber well). The well was revealed in October 1906 in the working-class district of Vienna (Favoriten) in memory of the important industrialist and art collector Rudolf von Arthaber (1795–1867).

### 'WÜRFELUHREN' (cubical-shaped clocks)

After the thoroughly positive experience made with the clock of the Arthaberbrunnen, the city of Vienna strengthened their chronometric efforts. The town building authorities were depended on to co-develop a street clock which was also electrically run, with the Schauer company. First and foremost, this was to fulfill two criteria: guaranteed time precision and good visibility from all sides for the passers-by.

At the end of August 1907, these goals were achieved: The first prototype was installed in a lamp post at the crossroads of the Opernring and Kärntner Straße, about seven meters high. Beside the electric drive, it showed another innovation: the four round dials, pointing in all directions had neither Roman nor Arabian figures, but merely lines to mark the five-minute units. Meticulous

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<sup>35</sup> For the history of the company see The Schauer History, *Unveröffentlichte Firmengeschichte (Manuskript)*, o. J. (um 1988).

attempts had proven that this abstraction was not only sufficient but these printed discs, that were about 1 meter in diameter, guaranteed a far better readable time than the previous models. The master clock was accommodated in the nearest advertising pillar in the Ringstraße, from where it steered four clockworks through an electric drive.<sup>36</sup>

On the evening of the 5th of September, the responsible offices of the City Council, together with the Schauer company, carried out one last inspection, which ran to full satisfaction. Now the clock could be handed over to the public.<sup>37</sup>

The reaction of the public was entirely favorable. The newspapers proudly boasted about the 'first electric street clock in Vienna'. They praised the little amount of space it required and that it overtook 'no separate space from the streets'. The new division of the hours was explained exactly to the readers and it was assured that 'one, nevertheless, can read the time easily during the day as well as at night'.<sup>38</sup> Pictures were also published of the new clock, whose design, although unusual, easily fit in with the street scene and caused no aesthetically motivated discussions.<sup>39</sup>

The prototype was so well received, that the local district authorities soon allowed other clocks to be put up: in the Neubaugürtel near the western railway station (1911), in the Schottenring (1913) and in the Schwendermarkt (1915).<sup>40</sup>



Figure 3: The cubical-shaped clock in the Neubaugürtel, illustrated postcard, 1914  
(Source: Author's collection)

<sup>36</sup> Hammer, *Die öffentlichen Uhren*, 292–293.

<sup>37</sup> Wiener Stadt- und Landesarchiv, 1.3.2.104.A4–Q1–Straßenbeleuchtung, 1902–1915, Z. 3174/1907.

<sup>38</sup> *Wiener Abendpost*, 30 Aug. 1907, 2; *Neuigkeits-Welt-Blatt*, 31 Aug. 1907, 10; 1 Sep. 1907, 9; *Illustriertes Wiener Extrablatt*, 1 Sep. 1907, 5.

<sup>39</sup> *Neuigkeits-Welt-Blatt*, 1 Sep. 1907, 9; *Illustriertes Wiener Extrablatt*, 1 Sep. 1907, 5.

<sup>40</sup> Archiv der Magistratsabteilung 33 – Wien Leuchtet, *Karteiblättersammlung*; *Amtsblatt der k. k. Reichshaupt- und Residenzstadt Wien* (104) 1909, 3252; (19) 1911, 651.

The design of these subsequent models had been modified again and were developed in to the so-called 'Würfeluhr' (cubical-shaped clock): The clock had gotten a cubic case with beveled corners. These had not only aesthetic, but also practical attributes because it guaranteed the optimum discharge of rainwater. Furthermore, the dial was easily changeable and made semitransparent, so that it could easily be read during its nightly illumination. And, finally, the minute division and both hands were made wider and therefore a little bit easier to read.

Together with the Schauer company the city of Vienna had created the type of a municipal clock which would point the way forward for the following decades. After the excellent implementation of the Schauer clocks, with their exact running, they soon became an approved brand name. Shortly before the First World War, the internationally successful enterprise expanded. The company headquarters was moved to Vienna (Döbling), where a modern factory was built that included workshops, a carpenter's workshop, office houses and living quarters.<sup>41</sup>

#### 'WIENER UHREN MISERE' (The Viennese plight of the clocks)

In 1902 there were already 69 public clocks in Vienna; 42 on steeples and 27 on facades or column clocks.<sup>42</sup> All these clocks, whether they were situated downtown or in the suburbs, had one thing in common: They were at the centre of an increasingly intense discourse about public time announcement. Critical media reports had already accompanied the construction of the first transparent clocks and still followed their advancement in the following decades. Primarily three subject areas were discussed: the inaccuracy of the time announcement, the unrecognizability of the dials, as well as the poor maintenance of the clocks. The introduction of the Central European time as the standard time also showed an important, long discussed stage on the way to the modern time management of the city. Different midday signs were introduced and the demand for a central regulation of the clocks increased. The fact that these debates were often restarted, can be evaluated as an indication for the successive importance the clock and the necessity to look at it had gained. Looking at a clock had become an everyday gesture familiar to the urban population.

During the 1860's and 1870's, yearly reports on the defective equipment in public spaces with clearly recognizable clocks appeared repeatedly in the newspapers. One stated that the available clocks were often mounted too high on top, so that reading the time was extremely unwieldy or, as in the

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<sup>41</sup> Schauer History, *Firmengeschichte*, o. S. (4).

<sup>42</sup> *Die Gemeinde-Verwaltung der Reichshaupt- und Residenzstadt Wien im Jahr 1902: Bericht des Bürgermeisters Dr. Karl Lueger* (Vienna, 1904), 218.

case of the Votivkirche, that even 'a telescope' was needed.<sup>43</sup> A violent debate was also started about both of the new clocks on St. Stephen's Cathedral. Although the clocks were located at a pleasant height, they functioned by no means to the satisfaction of the passers-by who regularly appeared in large amounts to marvel at the public attraction. After the initial surprise about the 'luxury' of two clocks installed side by side had faded away, it was above all the numeral clock, whose unusual construction caused a lack of understanding and inspired persistent criticism. 'The indicated Roman numerals are too small and extremely laborious to decipher,' a newspaper complained in October 1863.<sup>44</sup>

The criticism of one of the most prominent clock locations in Vienna did not fade away unheard. The figures were slightly enlarged by clockmaker Schönberger, however, they retained their Roman manner of numeration. Unfortunately, it did not run undisturbed. It seemed that the figures repeatedly and frequently jammed and revealed substantial differences in the time announcement between the neighboring clocks.<sup>45</sup>

The defective lighting and maintenance of the public clocks repeatedly caused annoyance among the population. In September 1872, the clock on the Minoritenkirche in Vienna (Alsergrund) showed, to the astonishment of the passers-by, 'for an unimaginable length of time, perpetually "half six (5:30)"', while the clock on the machinery building in the world exhibition area of the Prater had no hands. The Mariahilfer Kirche clock also had to get by without hands for some time.<sup>46</sup>

The volume and variety of complaints published in the newspapers clearly showed how much attention any malfunction of the public time announcement received. This applies especially to the night-time visibility, which should have been dramatically improved with the introduction of transparent clocks.

Behind all these small and big calamities, an increasing need for reliability and precision regarding the telling of time revealed itself. How difficult this was, appeared in the pathways used on a daily basis throughout the city. The measurement of time in different locations often differed so blatantly that some contemporaries were deeply annoyed or at the very least irritated. Thus in January of 1866 a reader wrote to the editorial staff of 'Die Presse':

It is an original fact that one can leave the Paulanerplatz in Vienna (Wieden), while the transparent clock there tells you it is 12 o'clock exactly, and arrive at the Stephansplatz with the hands of the transparent clock of the cathedral pointing to 11:45. This may be very pleasant for cheapskates who quibble with the wages owed to coachmen for the running time, or for people

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<sup>43</sup> *Die Presse*, 27 Aug. 1871, 15.

<sup>44</sup> *Ibid.*, 4 Oct. 1863, 4.

<sup>45</sup> *Ibid.*, 26 Sep. 1864, 5; *Kikeriki*, 30 Oct. 1871, 2.

<sup>46</sup> *Neues Fremden-Blatt*, 25 Sep. 1872, 4; *Das Vaterland*, 13 Sep. 1873, 2; *Neue Freie Presse*, 25 Sep. 1908, 11.



who need to provide an alibi, but for the honorable and peaceful residents, particularly however for the businessman for whom time is money, the differences between all of the public clocks in Vienna often have quite disagreeable results which I probably need not further describe. . . Finally, maybe these lines, included in your much-read paper, can give an impulse for the regulation of a thing which, for a long time now, has made us seem ridiculous to all visitors.<sup>47</sup>

The hint about the damaged public image of the city was absolutely deserved especially since Vienna was just starting to position itself as a major cosmopolitan city. The differences in the public time announcement were extremely harmful to this effort. Even the Viennese world exhibition of 1873 couldn't change anything regarding their condition. On the contrary, the annoyance of the population grew greater. In the name of an advanced civilization and culture, the citizens often vehemently demanded the exact time, because it alone could permit punctuality and the maximum utilization of the working hours: 'The state of the time announcement by the public clocks in Vienna must be seriously rebuked. ... This seems barbaric, oriental and is absolutely incompatible with life in a big city.'<sup>48</sup>

With all this, the fact that it was not so easy, for technical reasons, to equip the public time indicators with more exact clockworks also played a role. The sensational attempts with different drive mechanisms had made it clear, and thus the 'Wiener Uhrenmisere' (Viennese plight of the clocks) remained a topic that remained on everybody's mind for decades.<sup>49</sup>

## STANDARD TIME

The different times shown by the Viennese clocks also reflected the fact that there was no officially standardised time during these years, while the local times followed the respective position of the sun and thus, naturally differed. Within the Viennese city there were differences ranging from several seconds to an entire minute. For example, in the southeast suburb of Vienna (Simmering) the sun rises one minute earlier than in the centre of the city. It is therefore a fundamental problem which became extremely troublesome on a national level in the nineteenth century.

Hence, in October 1884 during an international conference in Washington D. C. the earth was split up in to 24 hourly zones and the meridian of Greenwich was fixed as the prime meridian. It was a

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<sup>47</sup> *Die Presse*, 31 Jan. 1866, 11.

<sup>48</sup> *Neue Freie Presse*, 7 Aug. 1875, 6.

<sup>49</sup> *Ibid.*, 22 Feb. 1912, 9.

decision which reflected the global political and economic power at that time.<sup>50</sup> However, the introduction of the Central European time (CET), which is relevant for Vienna, would still take some years. Especially in regards to long-distance traffic, the disadvantages of the fragmented time system were clear. Thus, the rail traffic in Austria-Hungary from the west to the east was calculated using Munich, Prague and Krakauer time.<sup>51</sup> Our own patterns of calculation came on the market to the relief of the temporal orientation.<sup>52</sup>

The introduction of a uniform time system was vehemently demanded for within the entire country. While CET was introduced to the entirety of the German empire in 1893 at the same time, this happened in succession in Austria-Hungary and initially for only the train and telegram traffic (in 1890 the Kingdom of Hungary, in 1891 Kingdom of Bohemia, in 1893 Austria and in 1894 Bosnia-Herzegovina and Croatia). Furthermore, the local times were maintained. In 1908 a Viennese guidebook listed in detail the differences to other European local times. Thus, Prague was 7, Linz 8, Salzburg 13, Innsbruck 19, Graz 3, Paris 55 ½ or London 65 ½ minutes behind the Viennese local time, however, Brünn was 2, Cracow 15, Lvov 31, Budapest 5 or Petersburg 55 ½ minutes ahead.<sup>53</sup>

A complicated system had been created which distinguished train-times from local times and was difficult for people to understand. Hence, the voices that demanded an abolition of the local time and the complete introduction of the CET (in the meantime it was also known as the 'standard time' in Vienna) became increasingly louder. It should be strictly integrated into the middle-class life, the 'Neue Freie Presse' stated, because, in the end everybody should be 'in the position to receive the exact standard time at any given time'.<sup>54</sup> The anticipated tourism also played a deciding role in these debates and the fact that Vienna around 1900 was significantly behind other European metropolises like Paris or Berlin in this matter.

Finally, the 1st of May 1910 was determined as the date for the introduction of the CET by the Viennese district council. It was a holiday in which most factories and workshops were closed and therefore no bigger time irritations were to be expected. The Viennese clocks were put back 5 minutes, 21 seconds, which, as was one noted later, proceeded without any problems in the entire municipal area. The last discrepancies caused by differences in local time were removed.

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<sup>50</sup> See I. R. Bartky, *One Time Fits All: The Campaigns for Global Uniformity* (Stanford:2007); V. Ogle, 'Whose Time is It? The Pluralization of Time and the Global Condition, 1870s to 1940s', in *American Historical Review* (5) 2013, 1376–1402. For the culture-specifically different handling of the time see R. Levine, *Eine Landkarte der Zeit: Wie Kulturen mit Zeit umgehen* (Munich, 2011).

<sup>51</sup> 'Ueber Normalzeit, Nationalzeit, Regionalzeit und Weltzeit und deren Einführung statt der Ortszeit ins's bürgerliche Leben', in *Carinthia. Zeitschrift für Vaterlandskunde, Belehrung und Unterhaltung* (11/12) 1890, 216.

<sup>52</sup> See W. Kos and G. Dinobobl (eds.), *Großer Bahnhof: Wien und die weite Welt* (Vienna, 2006), 300–1.

<sup>53</sup> E. Guglia, *Wien: Ein Führer durch Stadt und Umgebung* (Vienna, 1908), XIX.

<sup>54</sup> *Neue Freie Presse*, 1 May 1910, 8.

Mitteleuropäische oder Zurück-Zeit.



Figure 4: The introduction of the CET: The Viennese clocks were put back approximately 5 minutes, illustration, 1 May 1910 (Source: Author's collection)

Chronologically, Vienna had found connection with the remaining world. As the historian Gerhard Meissl has pointed out, this corresponded with the intensely growing integration of Vienna in to national networks, affecting the railway as well as the phone and telegraph services. The perception of space/ time relations in the modern age started to change, from narrow local ones to more abstract and vaster connections. Structures and procedures which until then had been independent of each other were now standardised.<sup>55</sup>

A basic rubric was now added to technological development. Not only the mentioned networks, also new forms of mass media like movies and newspapers became increasingly important, for the lasting change of time perception, according to the US-American historian Stephen Kern. They created a new feeling of the present, a feeling of simultaneity experienced by increasingly more people.<sup>56</sup>

However, the carried-out time correction had relatively little effect on the everyday life of the Viennese population. This was probably also due to the inaccuracy problem that still continued and was still technologically unsolved. The satire journal 'Wiener Luft' jeered: 'In any case, our public clocks will not feel embarrassed about still being wrong after the installation of the Central European time.'<sup>57</sup>

<sup>55</sup> G. Meißl, 'Hierarchische oder hetarchische Stadt? Metropolen-Diskurs und Metropolen-Produktion im Wien des Fin de siècle', in G. Meißl, R. Horak, W. Maderthaner, S. Mattl, L. Musner, and A. Pfoer (eds.), *Metropole Wien: Texturen der Moderne*, Vol.1, (Vienna, 2000), 330–6.

<sup>56</sup> Kern, *Culture of Time*, 314.

<sup>57</sup> *Wiener Luft*. Beiblatt zum humoristischen Wochenblatt *Figaro* (13) 1909, 202.

## ELECTRIFICATION AND CONTROL SYSTEM FOR MASTER CLOCKS

The inaccuracy problem of the urban clocks was only solvable, according to the coetaneous conviction, by their electrification during a simultaneous fusion amalgamating into a coherent technical system. The first electrically run clocks had already proven the advantages of the electric drive impressively.

So, as quickly as possible, the electrification was to be advanced further. At the end of 1913 there were already 24 public clocks with an electric drive in Vienna.<sup>58</sup> The new technology for the measurement of time progressed inexorably, as the 'Österreichisch-Ungarische Uhrmacher-Zeitung' stated in August of the same year: 'Presently the electric clock seems to be a trump in our field.'<sup>59</sup>

Besides the modification of existing clocks, the city of Vienna installed some local electric control systems for master clocks. In 1911, it was set up for the first time in the office house on Schlesingerplatz in Vienna (Josefstadt). Similar mechanisms followed in the office houses of other districts, as well as in the Naschmarkt.<sup>60</sup>

What was still absent, was a control system for the master clocks, that connected and regulated all public clocks in the city. In 1905, a new system was already being discussed: an 'electric control system with wireless transference'. It was constructed by Max Reithoffer (1864–1945), a professor at the electrotechnical institute of the Technical University, and the Viennese clockmaker Franz Morawetz.<sup>61</sup> Because the wiring of all public clocks seemed impossible, Reithoffer and Morawetz favoured the idea of a wireless signal transference: From a central station, electric waves would be sent out from an approximately 25-meter-high antenna. About 80 stations distributed throughout the entire city would support these waves, with their own antennas and transmit the signals – now, however, by wire lines – to secondary clocks. All public clocks and up to 4,000 private clocks were to be run in this manner, by which Vienna would be the first city, worldwide with a such clock system.<sup>62</sup> Reithoffer and Morawetz presented their proposal to the Viennese district council which agreed to a test run in August of the same year. Unfortunately, the technical difficulties were bigger than expected. The following years brought no determining technical breakthrough, in the end, one 'did not get beyond the state of the preliminary works' as the 1910 municipal administrative report ascertained.<sup>63</sup>

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<sup>58</sup> *Die Gemeinde-Verwaltung der Reichshaupt- und Residenzstadt Wien im Jahr 1913: Bericht des Bürgermeisters Dr. Richard Weiskirchner* (Vienna, 1914), 212.

<sup>59</sup> *Österreichisch-Ungarische Uhrmacher-Zeitung* (3) 1913, 1.

<sup>60</sup> Hammer, *Die öffentlichen Uhren*, 293.

<sup>61</sup> S. Fuchs, 'Eine elektrische Uhrenanlage mit drahtloser Uebertragung', in *Neue Freie Presse*, 20 Aug. 1905, 12.

<sup>62</sup> *Ibid.*; also see *Neue Freie Presse*, 15 Aug. 1905, 9.

<sup>63</sup> *Die Gemeinde-Verwaltung der Reichshaupt- und Residenzstadt Wien im Jahr 1910: Bericht des Bürgermeisters Dr. Josef Neumayer* (Vienna, 1911), 135.

The plan had failed. Therefore, in 1912, the city administration decided to host an international competition for the 'production and run of a control system for master clocks'. A committee, consisting of a representative from the city council and clock consultants from the town building authorities, was brought to life to prepare a public proposal and to research the experiences of other cities. The most important condition of the competition was, that the system should not permit more than a five second inaccuracy daily. Four companies made bids (the Swiss company Veuve D. Peret Fils from Neuchatel, the Österreichische-Normalzeit-Gesellschaft mbh., the Österreichische Elektrizitäts-A. G. Ericson and the Chronos Normaluhrengeellschaft mbh.) and study trips to the cities where the systems of these companies were running were planned for 1913.<sup>64</sup>

Nevertheless, the outbreak of the First World War stopped the project. In the end, a central control system for master clocks was implemented many decades later. With the events caused by the war, time fell into a state of disarray – literally as well as metaphorically.

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<sup>64</sup> *Die Gemeinde-Verwaltung der Reichshaupt- und Residenzstadt Wien im Jahr 1912: Bericht des Bürgermeisters Dr. Richard Weiskirchner* (Vienna, 1913), 205; *Die Gemeinde-Verwaltung der Reichshaupt- und Residenzstadt Wien im Jahr 1913: Bericht des Bürgermeisters Dr. Richard Weiskirchner* (Vienna, 1914), 212; *Österreichisch-Ungarische Uhrmacher-Zeitung* (9) 1913, 209–11; Hammer, *Die öffentlichen Uhren*, 294.