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Constructing the Stock Exchange. On the Rise and Fall of an Iconic Place of Capitalism

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Abstract

Marketplaces are fascinating locations for studying socio-economic interactions. One of the most prominent of these places were bourses or stock exchanges. Only very recently and almost unnoticed, the hectic physical spaces of these trading venues have been emptied, following the increased use of electronic trading and the end of parquet trading. This brought to a sudden end the 500-year-old institution as we know it: a physical space dedicated to the sole purpose of meeting, exchanging information, and trading. This article seeks to provide a concise history of constructing and refining one of the most iconic places of capitalism. I argue that combining the architectural history of exchange buildings with an analysis of the legal and economic purpose of the institution provides a powerful tool for locating and evaluating the impact of technological advances on commerce in global history.

Keywords: bourses or exchanges, marketplace, exchange processes, architectural history, financial institutions, impact of digitalisation



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Constructing the Stock Exchange. On the Rise and Fall of an Iconic Place of Capitalism

I. What is an Exchange?

The question, *what is an exchange?* may prompt self-evident answers. Since the 19th century, economists as well as lawyers have characterised bourses or exchanges as the embodiment of a perfect market. They have variously been described as the »central hub of commerce«,¹ the »most important [...] meeting point of purchasers and traders«,² the »brain of national economies«³ or as the »central mechanism of the capitalist system«. ⁴ For architects, they represent a special type of trading site, while for sociologists and art photographers they show human interaction in acceleration, most famously captured in Andreas Gursky's photograph entitled »Chicago, Board of Trade I. (1997)«. However, our memory is starting to fade: only very recently have all relevant international exchanges terminated floor trading. Trading has undergone a process of liberation from the physical constraints of the exchange hall and transformation into digital space. This brought the long history of exchanges as physical marketplaces to an abrupt end.

But when did this important institution of economic life originate? What essential features distinguished it from other trading venues? Can the *Basilica Julia* (54 BCE to 46 BCE), the *Mercanzia* in Bologna (1382) or the *Lonja* in Barcelona (1383) justifiably be called bourses?⁵ According to Fernand Braudel, bourses originated in the Mediterranean region around the 14th century, at the latest.⁶ More generally, dating the emergence of the *byrsa*, bourse, *Börse*, or exchange – as the Eng-

lish would call it after a decree of Elisabeth I⁷ – is all too often hindered by factual congeries of places and dates, offering little or no guidance.

This article aims to provide a history of the actual place of exchanges within Europe, from its beginning to digital dissolution in the present. The investigation takes us from 15th-century Bruges via 16th-century Antwerp and the golden age of 17th-century Amsterdam through to the present. The appearance of the world's first exchange building was linked to the gradual emergence of international markets in the Low Countries from the late Middle Ages through to the early modern period.⁸ By a careful study of both the architectural design as well as the legal and economic functions of the bourse, I argue that this new type of marketplace originated in Antwerp in 1531. Exchanges beyond European borders have been in operation since the eighteenth century, as witnessed in the case of Japan.⁹

In the following, I show how rapid advances in trading methods and technologies were instrumental in shaping the development of exchanges throughout Europe during the past five hundred years. Three epochs may be discerned: the 16th-century *Galerijbeurs* or *Hofhallenbörsen*, the Basilica exchanges of the 19th century – the architectural designs of which came to epitomise ascendant capitalism more than any other type of building – and, finally, the closing decades of the 20th century, which witnessed the waning pre-eminence of the exchange building as physical trading site following the increased use of electronic trading and the end of parquet trading over the last ten years.

1 GRÜNHUT (1885) 3 (author's translation).

2 LEXIS (1898) 255 (author's translation).

3 SCHMOLLER (1923) 612 (author's translation).

4 BERNHARD (1933) 105 (author's translation).

5 Cf. AUER (1902) 250 (with [reconstructed] ground plan and cross-section of the *Basilica Julia*, fig. 337 sq.);

for the latter two, see SCHREYL (1963) 13–15. For more details on the non-existence of exchange buildings or functionally comparable locations in ancient Rome, see FLECKNER (2010) 95–96 and 462.

6 BRAUDEL (1979) 85.

7 For more details on this point, see below III, towards the end.

8 See GELDERBLOM (2013).

9 Cf. SCHAEDE (1989); WEST (2000).

One final caveat: the primary objective is to advance our knowledge of specific types of marketplace in history, namely, bourses or exchanges. Surprisingly enough, although financial markets, market euphoria and bubbles have always been subject to scrutiny, until now little attention has been paid to the basic question as to what impact technological, as well as legal innovations have had on the market design of this prominent institution. While the focus of this paper is on market design, the microstructure of these markets and the contract law of derivative markets, deserves a separate analysis.¹⁰

II. What about Bruges?

Based on the *urtext* on the emergence of the bourse in Europe, the account of the Italian cartographer, author and merchant Lodovico Guicciardini (1521–1589), oft-cited over the centuries,¹¹ Bruges is commonly believed to have been the birthplace of the exchange. In travel guides, on the internet and in many popular works on economics, the building located in Vlamingstraat 35, Bruges (which can still be visited today) is called the world's first exchange. Nevertheless, the idea of Bruges as the birthplace of the institution is ill-founded and misleading. *Byrsa Brugensis* was the name for an open square. No exchange building ever existed in Bruges. This is substantiated by a careful re-reading of Guicciardini's account and by analysing the development of Bruges' trading system since the 12th century.

In the first edition of the *Descrittione di tutti i Paesi Bassi* of 1567, Guicciardini describes the spread of the use of the name *Borsa* as follows:

Ma diciamo vn' poco come cosa considerabile & non indegna di farne mentione, donde venga, & deriui questo nome di Borsa, tanto conuenientemente per accidente a vn' simil' luogo appropriato. E in Bruggia vna piazza molto commoda, a tutte le parti della terra; in testa della qual' piazza è vna grande & antica casa, da quella nobil' famiglia, detta della Borsa, stata edisicata, con le sue armi di viuia pietra, sopra la

portal, le quali armi sono tre borse. Or da questa casa, famiglia & armi, prese il nome (come comunemente in simili cose auuene) quella piazza. Et così perche li mercatati dimoranti in Bruggia, elessero, vsauano, & ancor' hoggi per raddotto de loro negocij vsano essa piazza o, Borsa, andando eglino poi alle fiere d' Anuersa, & di Berga, dierono anco a similitudine, & vsanza della loro di Bruggia, il nome di Borsa a quelle piazze, & luoghi, doue essi in detta Anuersa, & Berga a trafficare si raunauano.

Et d'Anuersa parimente tanto è stato fauorito & approuato questo nome, tirandolo ad altro senso, hanno poi ancora i Franzesi, portato non ha molto tempo, il medesimo nome di Borsa a Roano, & insino a Tolosa; & datolo a certe piazze, & loggie mercantili, ordinate al modo di qua, per raddotto de mercatanti [...].¹²

But let us say, as a noteworthy and not unworthy thing to mention, from whence this name Borsa, which coincidentally is so adapted to such a place, comes and is derived. There is a square in Bruges, very comforting to all parts of the world; it starts with a large and old house built by a noble dynasty called della Borsa, with its natural stone coat of arms, which are three purses, above the door. It was from this house, lineage and coat of arms that the square took its name (as is commonly done in such a case).

And so, because the merchants who stayed in Bruges chose, used and still today use this square or bourse as their place of business, they also, when they subsequently visited the fairs of Antwerp and Bergen [op Zoom], after the similarity and the use of that in Bruges, gave the name bourse to the places and sites where they gathered to negotiate in the aforementioned Antwerp and Bergen. And in Antwerp this name has also, in a different sense, acquired so much approval and applause that later, not long ago, the French still gave the same name bourse in Rouen and Toulouse, and to certain trading places and houses, in the local manner, as the seat of merchants.¹³

10 See FLUME (2019); ENGEL (2021).

11 Cf. ESQUIRE (1845) 58–59; VON ZESEN (1664) appended on p. 3 after the index, as supplement to p. 233 of the

main text; HERBACH (1726) 55–56; ANDERSON (1764) 360; WHITER (1800) 89; KIRCHENPAUER (1841) 1–2; KULISCHER (1929) 316.

12 GUICCIARDINI (1567) 67.

13 Author's translation, based on the German translation of the Guicciardini text by VAN HOUTTE (1981) 238.

By the middle of the 15th century at the latest,¹⁴ a square located in Vlamingstraat – to the north of the present-day Grand Place (Grote Markt) – was named *die boers*,¹⁵ *de beurs*,¹⁶ *Byrsa Brugensis*¹⁷ or *Oude Burse*.¹⁸ By that time, Bruges had emerged as a pivotal international market. The economic rise of the city was linked to the flood of 1134, which had opened up access to the sea from the Scheldt estuary via the *Zwin*.¹⁹ This paved the way for the gradual rise of the trade fairs in Bruges from 1200 onwards, the concomitant demise of those in Champagne, and the transition from (temporally limited) fair trading to a permanent market within the city.²⁰ The square described by Guicciardini served as the meeting place of mainly Italian merchants, who specialised in exchange transactions.²¹

1. Reconstructing the market square

It has been claimed that this square was named after the van der Beurze family who operated three hostels, two of which were located on the *Byrsa Brugensis*, between the 13th and 15th centuries.²² This information is vital for clarifying the function and naming of the market place and adjacent buildings. When standing in front of the house *ter Beurze* in Vlamingstraat 35, in present-day Bruges, what one sees is by no means the world's

oldest bourse but rather one of three hostels erected and operated by the van de Beurze family: in other words, *Ter Beurze* in Vlamingstraat 35, the *Ter Ouder Beurze* in Vlamingstraat 37, and *De Cleene Beurze*, in *Grauwkerksstaat* 2.²³ Thanks to Antonius Sanderus' (1586–1664) pictorial reproductions in *Flandria Illustrata*, we have a fair idea as to the appearance of the *Byrsa Brugensis* square around the middle of the 17th century.

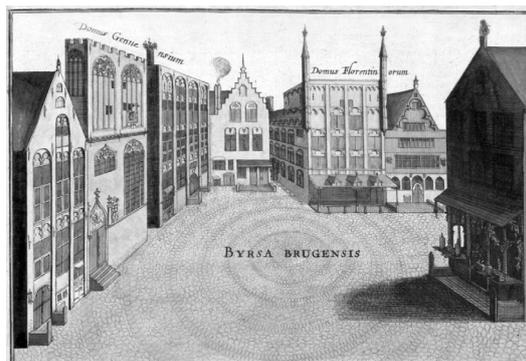


Illustration 1: Antonius Sanderus, *Flandria illustrata*, Tomus Primus 1641, p. 275²⁴

Depicted in clockwise fashion, the illustration features the trading consulate of the Genoese merchants (second building from the left, erected in 1441 (Vlamingstraat 33)), the house *Ter Beurze*

14 EHRENBURG (1885) 448 states 1448 as the earliest documented date.

15 Hieronymus Münzer »Aliud est forum, ubi conveniunt mercatores: die boers dictum. Ubi inquam Hispani, Itali, Angli, Almani, Ostrogotti, et omnes nationes conveniunt« [cited after MURRAY (2005) 178].

16 See EHRENBURG (1885) 403 and 448 n. 68 with the remark that a column from Liège, captured as booty, was erected in Bruges »up de buerze«.

17 In *Flandria illustrata* by ANTONIUS SANDERUS, 1641, p. 271.

18 In the map drawn in 1562 by Marcus Gerards the Elder.

19 On the routes to Bruges, see HÄPKE (1911) 5–8.

20 GELDERBLUM (2013); VAN HOUTTE (1977).

21 VAN HOUTTE (1981) 244.

22 DEVLIEGHER (1975) 418; on the history of the van der Beurze family: MARECHAL (1949) 15–24; GREVE

(2011). Nota bene, the name of the family is spelled in countless variations.

23 DEVLIEGHER (1975) 418; thus EHRENBURG (1885) 447 is mistaken in claiming that »as far as the spacious and ancient house of the van der Burse family mentioned by Guicciardini is concerned, it is certain that a house called »ter buerse« or »ter ouder buerse« (old exchange) already existed in Vlamingstrate, Bruges, towards the close of the thirteenth century«. In reality, these are not alternative names for the same building, but separate buildings located next to each other (see main text below for more details).

24 Below the illustration can be read the following comment: »Itali quoque eundem modum hic sua habuerunt Prætoria; & nominatim Florentini & Genuenses, in quorum Prætorio hæc inscriptio legitur: Hoc Ædificari Fe-

cerunt Mercatores Januenses Brugis Commorantes Anno CIO CCCC XLI. CIO CCCC XXIX. Utrumque autem hoc Prætorium, tam Florentinorum, quam Genuensium magnifice structum, imminet Bursæ Brugensi, eamque a duobus lateribus veluti claudit. (Illustrated as in the original).« (= The Italians also settled here; especially the Florentines and the Genoese, on whose house one reads the following inscription: This building was built in 1441 by the Genoese merchants living in Bruges. And another [inscription] with the same sentence referring to the year 1429. And these two houses, of both the Florentines and the Genoese, are beautifully situated on the Bruges bourse and appear to be attached on each side.) (author's translation).

(third building from the left, built in 1453²⁵ (Vlamingstraat 35)), the Venetian merchants' building (Ter Ouder Buerse, fourth building from the left, first officially documented in 1285²⁶ (Vlamingstraat 37)), and finally the trading consulate of the Florentine merchants (fifth building from the left, erected in 1429 (Academiestraat 1)). Sanderus' illustration constitutes a snapshot. Only the Genoese are mentioned by name, since the Venetian merchants had left Bruges in favour of Antwerp at the beginning of the 16th century.²⁷ Furthermore, by the time of Sanderus' publication, the last person to have borne the name van de Beurze had been dead for 149 years.²⁸ The above-mentioned house Ter Beurze in Vlamingstraat 35, erected by the van der Beurze family in the 15th century in the midst of the Italian trade consulates, operated as a hostel for about 40 years. Whether Guicciardini was referring to Ter Beurze or Ter Ouder Buerse in his *Descrittione* is impossible to say with absolute certainty.²⁹

2. Hostels and Hosteliers in Bruges

There should be no misunderstanding, however, about the kind of trading that took place on this square and within the adjacent buildings. James M. Murray³⁰ points out that a keen interest in the origin of the exchange should not lead us to overlook the key roles played by hosteliers and brokers in the history of trading in Bruges. Indeed, though a more detailed discussion would go beyond the limits of the present article, the hosteliers, or *ostelliers*, were far more than mere innkeepers.³¹ During the period of Bruges' economic heyday following the development of the Flemish textiles trade, when the »medieval world market«³² estab-

lished itself in the town in the 14th and 15th centuries, the hostels functioned not just as guest houses but as places of hospitality and entertainment, stables, warehouses and trading centres.³³ Commodities were stored in the hostel cellars (*kelnare*) or in nearby storage rooms.³⁴

Regarding the significance of the institutional function of the hostel, it is important to note that it was not until well into 14th century that foreign merchants had their own building complexes in Bruges. Hostels in Bruges are not to be confused with *Fondachi* as we know them from the Mediterranean region, which served the merchants of their respective countries as trading places, storage space and dormitory. Such buildings did not exist in Bruges. International trade depended on the use of hostels variously located around the city and the services of the hostelier.³⁵ The latter provided their guests with information, acted as business agents, were active in commercial transactions and payments, functioned as representatives for absent merchants, and sold the commodities stored on their premises.³⁶ They were jointly liable for any debts accrued by their guests.³⁷ It was not uncommon for merchants to be associated with the name of the hostel where they lodged. Thus, a merchant could be referred to as *hospes Roberti de Bursa*.³⁸ Business transactions between merchants were concluded through the services of either the hostelier, a broker employed by the hostelier (*makelaer* or *couretier*), or else by an independent broker.

Furthermore, by the end of the 13th century, it was obligatory for foreign merchants to draw on the services of a broker for all transactions exceeding five Flemish pounds.³⁹ It is commonly held that this close association between the merchants

25 DEVLIEGHER (1975) 418: »Façade-écran de la maison »Ter Beurze«, [...] datée 1453 sur une pierre de façade déplacée en 1947«. This part of the facade is shown in Devlieghe's appendix under no. 992; there is also a wooden beam with the coat of arms of the family van de Beurze dating to 1453 with illustration of the beam (no. 993) and the house (no. 995–996) [DEVLIEGHER (1975) 419].

26 EHRENBURG (1885) 447.

27 Cf. MURRAY (2005) 179 n. 3.

28 According to VAN HOUTTE (1981) 240, the last bearer of the family name died in 1492; this concurs with

MARECHAL (1949) 23 (who refers to Gailliard).

29 See VAN HOUTTE (1981) 243; by contrast, MURRAY (2005) 179 n. 3 claims that it was the *Ter Oude Beurs*.

30 MURRAY (2005) 179–180.

31 Cf. VAN HOUTTE (1983); GELDERBLOM (2013) 42–52; HÄPKE (1911) 9–10.

32 HÄPKE (1908).

33 VAN HOUTTE (1983) 182.

34 GREVE (2011) 71.

35 GELDERBLOM (2013) 23 and 45–46; BLONDÉ et al. (2007) 155–156; see also EHRENBURG (1885) 413 with n. 15, who points out that the Florentine merchant Francesco Balducci Pego-

lotti (1310–1347) in his famous merchant's handbook *Pratica della mercatura* described »the Bruges »celliere« as synonymous with »Fondaco« and »Magazzino«.

36 GELDERBLOM (2013) 43; HÄPKE (1911) 10.

37 MURRAY (2005) 198.

38 van Houtte (1983) 177 and 181.

39 GELDERBLOM (2013) 45–46.

and the hostels and hosteliers led to the custom of concluding business transactions in the hostel itself or in its immediate vicinity.⁴⁰ This enabled both seller and buyer to inspect the goods on-site prior to the conclusion of the contract. Here Rudolf Häpke's account of the daily routine of a German merchant in Bruges proves instructive:

The working day begins early each morning; it is important to make use of daylight. Buying and selling require considerable time and attention. People prefer to buy ›in person‹. Thus, the merchant himself appears at the sales hall, or even goes down into the goods cellar. One tastes, tests and touches, and perhaps even the sense of smell is exercised. One then moves on to the cumbersome task of weighing [...]. The most important thing is yet to be done, negotiating a price, until, finally, the ›God's penny‹ (*Gottespfennig*), a small gift to charitable ends, is paid at the end of the deal, which is then celebrated by drinking wine together (*Wein-kauf*).⁴¹

While commodity trading took place in the vicinity of the hostels and warehouses, merchants also met at various other locations throughout Bruges, among them the *Byrsa Brugensis*. According to Raymond de Roover, Bruges was a »money market«, the meeting place of which was the *place de la Bourse*. It was at this market that Italians and Spaniards would meet, though not Germans, who did not have banking facilities east of the Rhine at their disposal. According to one of de Roover's sources dating from 1482, all merchants engaging in this activity were known as *marchans de la bourse*.⁴²

3. Etymology and Bruges

To what extent does this brief digression into the economic history of Bruges advance our understanding of exchanges? In his *Etymologicum Teutonice Linguae* of 1599, Cornelis Kiliaan (1528–1607), the translator of Guicciardini's work into Dutch, describes the »exchange of the merchants«, or *borse der koop-lieden* as follows: »Bourse (*borsa*), in contemporary vernacular *Bursa*, derived from great house of the bursa, or purse, was the first to be thus designated in Bruges, Flanders«. ⁴³ While the designation »bourse« is not particularly original, it is certainly a fitting name for a Bruges family engaging in merchant trading as hosteliers, or for a square associated with that trade. The medieval word *bursa* (leather wallet or purse) can be traced back to the ancient Latin *byrsa* which, in turn, is based on the Greek word βύρσα (coat, skin). ⁴⁴ The frequent use of *bursa* (»purse«) as a general term for all manner of economic activity may well have led to its being employed in Bruges, too. In medieval Europe, *bursa* could also refer to a common fund, a commercial cooperation, or a student lodging house. ⁴⁵ An example of the latter use is the *Bursa* at Tübingen University, erected at the end of the 15th century. The *rescontre*, a key accounting procedure in medieval bills of exchange, was also referred to as »paying with a closed purse« (*»Zahlen mit geschlossenem Beutel«*). ⁴⁶ All this is likely to have prompted medieval merchants to call a square on which primarily currency exchanges took place »bourse«. With respect to the word bourse as designation for a place of trade, there can be little doubt that this particular name can be traced back to Bruges as an alternative to the Italian market (*mercato*), square (*piazza*) or lodge (*loggia*). ⁴⁷ In short, trading in Bruges led to the coining of the homonym by which we mean both a purse and the actual place at which trading was carried out. No more, but no less.

40 GREVE (2011) 71; VAN HOUTTE (1981) 237 and 242; GELDERBLUM (2013) 45; EHRENBURG (1896a) 81.

41 HÄPKE (1911) 12–13 (author's translation).

42 DE ROOVER (1968) 28.

43 KILIAAN (1599) 66 (author's translation): »Borse, vulgo bursa ab ampla domo bursae sive crumena signo insignita Brugis Flandrorum sic primum dicta«.

44 Cf. entry »burse«, in: SIMPSON / WEINER (1989) 683; entry »Burse«, in: STRAUSS (1997) 437–442; WHITER (1800) 89.

45 SEILER (1921) 212–213; RÜCKBROD (1977) 56–57.

46 KOCH (1881) 478; VAN DER WEE (1993) 151 with n. 32, according to whom the *rescontre* was a widespread practice in Antwerp in the 16th century.

47 Cf. KULISCHER (1929) 316.

III. The World's First Exchange: Antwerp

The exchange building, as a new, distinctive and independent architectonic type of economic life, became evident by 1531 at the latest, with the opening of the exchange in Antwerp.⁴⁸ The *Nieuwe Beurs* differed from all previous trading venues in its functional design. The appearance of the world's first exchange building has come down to us in the form of a copperplate engraving featured in Guicciardini's aforementioned book on the Netherlands, published in 1581.

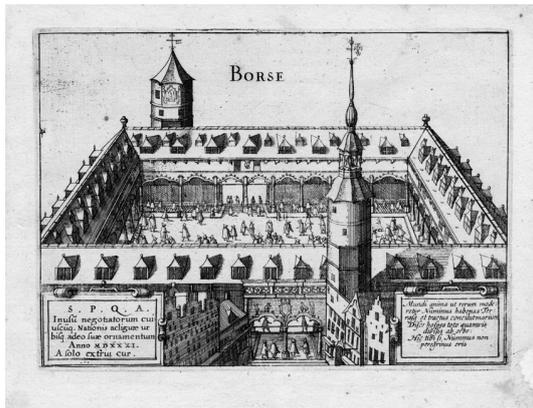


Illustration 2: Lodovico Guicciardini, *Descrittione di tutti i Paesi Bassi*, 1581, p. 100 sq

Built by municipal architect Dominicus van Waghemakere (1460–1542) in the late Gothic style, the *Nieuwe Beurs* was a so-called Hofhallenbörse or Galerijbeurs and served as the model

for other exchange buildings through to the 19th century.⁴⁹ The courtyard measured 51.5m in length and 40m in width, and was enclosed by a two-storey building that on its ground floor included a 6m wide arcade.⁵⁰ According to estimates, the construction costs amounted to 300,000 gold crowns.⁵¹ From 1540, the first floor of the building housed the so-called *Schilderspand*, a series of more than one hundred sales galleries in which the first modern European art market established itself.⁵²

Two striking and highly significant details help characterise the building's function. The first is that the square is »empty«: the goods are absent.⁵³ In contrast to the *Fondachi* or the late Gothic trading halls of Flanders, the Antwerp bourse served as an enclosed space not for the on-site purchase or inspection of goods, but for the exchange of information and for the initiation and conclusion of contracts.⁵⁴ Daily trading times were restricted and ran from 11am (later 10am) to shortly after 12 noon. Trading is also said to have taken place in the evening around 6pm.⁵⁵ Merchants kept up to date about prices by reading »price currents« (*cours des marchandises*, *Preiskuranten*), printed lists of commodity prices and exchange rates.⁵⁶ We have only limited knowledge of what was traded at the Antwerp bourse. Based largely on Guicciardini's account, it is generally assumed that above all financial transactions were concluded at the *Nieuwe Beurs*, mainly relating to bills of exchange and insurances.⁵⁷ Conversely, commodity transactions are said to have been made primarily at the so-

- 48 The »Old Bourse« was a relatively small arcade erected in 1515 at the back of a patrician house in Rue de Jardin; see PEIFFHOVEN (1888) 162–163 (with illustration); MESEURE (1987) 22, incl. ground plan and illustration in the appendix under no. 2 f. Dominicus van Waghemakere, who went on to build the *Nieuwe Beurs* 16 years later, had also been the architect of this arcade.
- 49 For a key contribution to the history of the Antwerp bourse, see DENUCÉ (1931); on its architectural history, see MESEURE (1987) *passim*.
- 50 PEIFFHOVEN (1888) 165–166; MESEURE (1987) 22–23; SCHREYL (1963) 16–17; a floor plan as well as a sketch of the interior are reproduced in: AUER (1902) 252.

- 51 See CALABI (2004) 176.
- 52 Hierzu VERMEYLEN (2000); GUICCIARDINI (1567) 99, speaks of »Panto delle dipinture«.
- 53 Cf. in WEBER (2013) 368–369 who distinguishes between »presence of goods (*fairs*)« and »absence of goods (*exchange trading*)« (italicised in original).
- 54 Cf. on trading halls (with reproductions): SCHRÖDER (1914); on *Fondachi*: CALABI (2004); CALABI/KEENE (2007b) 318–321; PEVSNER (1976) 237.
- 55 See GORIS (1925) 108.
- 56 Cf. McCUSKER/GRAVENSTEIJN (1991) 43–44 and 85–89.
- 57 On the importance of Antwerp as a money market, see HAUSSHERR (1970) 94–96; VAN DER WEE (1993)

196–197; on the trade of Antwerp's merchants, see PUTTEVILS (2015).

called *Engelse beurs*, the »English Exchange«,⁵⁸ built a few blocks away in 1550, where trading began an hour earlier than at the *Nieuwe Beurs*.⁵⁹

The second remarkable detail is to be found in the building's inscription, reproduced in the lower left-hand corner of the etching: *in usum negotiatorum cujuscunque nationis ac linguae* (»Dedicated to the merchants of all peoples and to all languages«). The bourse became the place of general assembly for merchants of all nations: each trading nation had its place at the Bourse, where they could always be found.⁶⁰ A plan of the bourse in Amsterdam shows that there, the arcades' pillars were consecutively numbered. Each number was allocated to a type of good, vocational class or group of persons.⁶¹ Similar plans have been preserved for the Royal Exchange in London (1761) and the *Neue Börse* Hamburg (1841).⁶² Something of the lively hustle and bustle within the courtyard can be gleaned in two contemporary accounts of the Antwerp and Amsterdam bourses. A poet by the name of Daniel Rogier, cited by Richard Ehrenberg, described the atmosphere in sixteenth-century Antwerp in the following way:

What one heard was the confusing babble of all manner of languages, and what one saw was a

colourful melange of all types of costume; in short, the Antwerp exchange appeared as a miniature world in which were convened all parts of the greater world.⁶³

The German writer Filips von Zesen (1619–1689) invoked a similar picture for Amsterdam:

It is in this trading-house that virtually the whole world is negotiated. Besides German merchants from upper and lower Germany, one might find Poles, Hungarians, Walhalz, French and, indeed, occasionally even Indians, and all manner of other foreign peoples. Here, one speaks of purchasing and goods' values, namely, the trade-off of merchant goods, loading and unloading of ships, and changing and counter-changing. Indeed, here one experiences the condition of all kingdoms and countries of the world and, no less, what is most remarkable about these.⁶⁴

There has been much conjecture as to what buildings might have served as models for the Antwerp bourse. Both the *Fondaco dei Turchi*⁶⁵ (erected in 1225) and the *Fondaco dei Tedeschi*⁶⁶ (erected in 1228) in Venice have been suggested.

58 GUICCIARDINI (1567) 67: »Ecci poi la gratiosa piazza della Borsa de gli Inghilesi, cosi detta perche la terra a lor contemplatione con vna bella loggia, la fece edificare l'anno m. d. l.« (»Then there is the pretty square of the English Exchange, so called because the country erected it in 1550, and it was equipped with a beautiful little loggia«) (Translation courtesy of Salvatore Marino and Pierangelo Buongiorno). An illustration of the *Engelse beurs* – a courtyard framed by a U-shaped, single-story building with a covered arcade – can be found SAUNDERS (1997) 49 (where it is erroneously referred to as Royal Exchange; for more detail, see CALABI/KEENE (2007a) 291 incl. n. 15).

59 Cf. EHRENBERG (1896a) 12; COORNAERT (1961) 149; VAN DER WEE (1963) 367–368; VAN DER WEE (1977) 331–332.

60 GORIS (1925) 108.

61 LEUCHS (1839) 512–513; a picture of the »Platte grond van de Beurs te Amsterdam« by Jan Caspar Philips

has been preserved in the Leiden University Library; also printed in: VAN ROOY (1982) 15.

62 See DONOWELL/WALKER (1761) [reprinted in: SAUNDERS (1997) 22]; see also HUME (1767) 106; both plans refer to the Royal Exchange II. (1169–1839); for Hamburg: KLEIN (1958) 26.

63 EHRENBERG (1896b) 12 (author's translation): »Man hörte dort ein verworrenes Geräusch aller Sprachen, man sah dort ein buntes Gemenge aller möglichen Kleidertrachten, kurz die Antwerpener Börse schien eine kleine Welt zu sein, in der alle Theile der grossen vereinigt waren«.

64 VON ZESSEN (1664) 321 (author's translation): »Auf diesem Kaufhause verhandelt man fast die ganze Welt. Alhier finden sich / neben den Hoch- und Nieder-deutschen kaufleuten / auch Pohlen / Ungern / Wälsche / Franzosen / ja zu weilen auch Indier / und andere fremde Völker. Hier redet man vom einkauf und währte der wahren / vom vertauschen der kauf-

mannsgühter / vom laden und entladen der schiffe / vom wechseln und widerverwechseln. Ja hier erfährt man den zustand aller Königreiche und länder der ganzen welt / auch was sich in denselben denkwürdigen begebenet«.

65 ESQUIRE (1845) 61: »If you demand of me whence cometh that common likeness of a Square, with colums and arches about it, to be seen in all Bourses, I do not pretend to decide but yet I will venture to say, that I think the *Hollander* took the plot from the *Venetian's Rialto*, and he again from the *Kanes of the Turks*« (italics in the original).

66 SCHREYL (1963) 17.

The cloister-like interior was probably also influenced by the form of Antwerp's *Oude Bourse*⁶⁷ a relatively small arcade in the Rue de Jardin erected in 1515.⁶⁸ Furthermore, the open-roofed courtyard structure indicates that the design of the bourse of Antwerp is beholden to the concept of a market-place.⁶⁹

In contrast to the view taken here, according to which the world's first exchange was established in Antwerp, Fernand Braudel⁷⁰ cautions against the notion that the exchange is an exclusively northern European brainchild: the bourse, he argues, originated in the Mediterranean region by the 14th century, at the latest. As Braudel goes on to explain, in economic history we are familiar with merchants meeting in open-air trading places, in front of or under loggias, or in the interior of a *fondaco*. We know that prior to the construction of the Amsterdam exchange building in 1611, merchants would convene on the *Nieuwe Brug* (New Bridge) or, in bad weather, inside the *Oude Kerk*.⁷¹ Lombard Street in London was considered an especially prestigious location where, towards the end of the 15th century, (foreign) merchants would meet to carry out financial transactions.⁷² The Tontine Coffee House in New York, opened in 1793, or Café Linser in Grünangergasse, in 19th-century Vienna, seem to have served similar functions.⁷³ In Cologne from around 1553 onwards, merchants benefited from a special license from the town council that allowed them to assemble in front of the town hall.⁷⁴ Hamburg city council permitted the merchant guild »*Gemeiner Kaufmann*« to conduct financial transactions near the Trostbrücke in 1558.⁷⁵ What confirms Antwerp's status as the home of the first bourse of the world, however, is the concept of a building the express purpose of

which was to serve as a meeting place for international merchants: the open-roofed, enclosed square. Unlike the *Fondachi*, the Antwerp bourse was neither a wholesale market with an attached warehouse nor an accommodation facility for merchants. The building's function changed in so far as the goods were not »present« and that access remained unrestricted irrespective of nationality. Antwerp's innovative forte lay in the fact that, with Charles V's support, it was able to realise this new type of building.⁷⁶ Thus, following Hunt and Murray's assessment, there is no doubt that Antwerp, not Bruges, constitutes »the final architectural embodiment of the ›Bourse‹«.⁷⁷

IV. The Ascent, Apogee and Abrupt Cessation of the Age of the Exchange Building

The events in Antwerp marked the onset of a Europe-wide process of transformation that takes us from scattered, open-air merchants' meeting places to a centralised place of trading with no goods present in the courtyard: the exchange as we now know it. Ultimately, the architectural history of the exchange provides us with a fair idea of how, and in what spatial contexts, the exchange, as an institution evolved from 16th-century Antwerp through to the present.

1. *The Hofhallenbörsen or Galerijbeurs since the 16th Century*

Until the 19th century, the majority of buildings housing exchanges were adaptations of the characteristic *Hofhallenbörse* or *Galerijbeurs* model

67 The »Old Bourse« was erected at the back of a patrician house; see PEIFFHOVEN (1888) 162–163 (with illustration); MESEURE (1987) 22, incl. ground plan and illustration in the appendix under no. 2 f. Dominicus van Wagemakere, who went on to build the *Nieuwe Beurs* 16 years later, had also been the architect of this arcade.

68 In the 14th century, monastic communities are said to have rented their cloister to merchants for their sales transactions, see MESEURE (1987) 26.

69 See also SCHREYL (1963) 17; a humorous discussion (in verse form)

of the advantages of an open, unroofed central courtyard from the pen of Thomas Gresham is printed by EHRENBURG (1896a) 82.

70 BRAUDEL (1979) 99.

71 SPUFFORD (1995) 309; OGILVIE (2011) 368–369; COORNAERT (1961) 148; SCHREYL (1963) 20 with n. 91 on the merchants' habit of assembling in the open air.

72 CALABI/KEENE (2007a) 300–301; EHRENBURG (1896a) 77.

73 For New York: SEVERINI (1981) 31–32; For Vienna: GRANICHSTAEDTEN-CZERVA (1927) 14–15; BALZAREK (1973) 93–94.

74 KUSKE (1953) 26; HELTEN (1922) 2.

75 KLEIN (1958) 4.

76 On the influence and role of Charles V in erecting the bourse, see SPUFFORD (2002) 51–52; SCHREYL (1963) 95–96 n. 91.

77 HUNT/MURRAY (1999) 214.

of Antwerp. Particularly worthy of mention here are the Lille Exchange (1563), the London Royal Exchange I (1566–1666) (and its successor buildings following destruction by fires the Royal Exchanges II (1669–1838) and III (1841)), the Seville Exchange (1593) and the Amsterdam Exchange (1611).⁷⁸

Due to its economic and developmental significance, the Amsterdam bourse stands out as *the* central European market of the 17th century. The meteoric rise of Amsterdam and the Netherlands as a whole – the era known as the Golden Age of the Netherlands – was concomitant with the Dutch Uprising of 1568. The religious wars between the Catholic south and the Protestant north led to the exodus of Protestant merchants from Antwerp and their relocation north to Amsterdam, leading to Antwerp's eventual economic decline.⁷⁹ As a conveniently located shipping centre, Amsterdam established itself as Europe's central commodities, finance and capital market. Full of admiration, Daniel Defoe writes in his book *A Plan of the English Commerce* (1728):

The Dutch must be understood as they really are, the *Caryers of the World*, the middle Person in Trade, the Factors and Brokers of Europe: that, as is said above, they *buy to sell again, take in to send out*: and the Greatest Part of their vast Commerce consists in being supply'd from all Parts of the World, that they may supply at the world again.⁸⁰

The central hub of the economic metropolis was the *Byrsa Amsterodamensis*, built according to the plans of Henrik de Keyser (1565–1621), in which the first modern liquid commodity and stock market was established.⁸¹ The Amsterdam bourse is also the birthplace of European futures and options trading.⁸² In the year 1635, the prices of 350 goods were listed weekly, and also translated into Italian, French and English.⁸³ The trading of the shares of the *Vereenigde Oost-Indische Compagnie*



Illustration 3: Byrsa Amsterodamensis (1612), Claes Janszoon Visscher (1587–1652)

(VOC) and the *Geocroyeerde Westindische Compagnie* (WIC) and the tulip mania of the 1630s are world-famous and have been the subject of much scholarly discussion. The first descriptions of how exchange trading works also date to this period: the famous *Confusion des confusions* (1688) by Joseph de la Vega (1650–1692), in which exchange trading is presented in dialogue form, the remarkably detailed accounts of the merchant Jean-Pierre Ricard in *Le Negoce d'Amsterdam* (1722) and finally, the *Traité de la Circulation et du Crédit* (1771) by Isaac de Pinto (1717–1787). Notably, the Amsterdam bourse is not, as is often maintained in a striking and misleading manner, the »first securities exchange or stock exchange« in the world, but a general exchange on which commodity and financial securities were traded in the inner courtyard and arranged according to column numbering. Specialisation in securities and commodities exchanges was yet unknown. The Amsterdam bourse, located at the Damrak, operated for 227 years from 1611 until its demolition in 1838 due to dilapidation.⁸⁴

The London Royal Exchange I also deserves brief mention. Established in 1566 by Sir Thomas

78 For further details and references to buildings, see MESEURE (1987) 100–107; SCHREYL (1963) 16–20.

79 GELDERBLOM (2013) 32–41.

80 DEFOE (1728) 192 (italics in the original); on Defoe's economic writings, see GOETZMANN (2016) 322–327, 332–337, 345–346.

81 Among the rich literature on commerce in Amsterdam are PETRAM (2014); LESGER (2006); ISRAEL (1990); WILSON (1941); BARBOUR (1950); SMITH (1919); EHRENBERG (1892); SCHELTJEMA (1846).

82 GELDERBLOM/JONKER (2005); FLUME (2019) 206–209; STRINGHAM (2003).

83 For a detailed account: LESGER (2006); MCCUSKER/GRAVENSTEIJN (1991).

84 Cf. SCHREYL (1963) 20; VAN ROOY (1982) 19–21.

Gresham, it initially stood in the shadow of the Amsterdam market.⁸⁵ That Gresham was the first to realise this project is no coincidence: having previously been in the employ of the English Crown in Antwerp as its agent in financial transactions, he was entirely familiar with the functions of the bourse. The fact that the English-speaking countries do not use the term bourse but exchange dates back to this period. We read in Guiccardini:

[I]l medesimo hanno fatto frescamente gli Inghilesi a Londra, autore & fondatore di si nobil' machina & edifitio M. Tomaso Grassano patritio qualificatissimo di quella real' città. Et e notabile che quando fu finito, il detto edifitio la Regina Elizabetta medesima venne a Londra per vederlo, & transferitasi sul luogo lo lodò molto, ma perche ei nó paresse copia della Borsa d' Anuersa, gli dette il nome di Cambio reale, comandando espressamente che non si chiamasse altrimenti, nondimeno tanta forza ha hauuto quel' nome, che non e bastato il suo comandamento a obuiare che non s'appelli comunemente Borsa.⁸⁶

The same [sc. the construction of an exchange building] was recently undertaken by the English in London, under the auspices of Mr. Thomas Gresham, most honourable patrician of this royal city, namely, as author and founder of this such noble a plan and building. And it is remarkable that once the aforesaid building had been completed, Queen Elizabeth herself came to London to visit it, and at once praised it. And yet, since it did not appear to be a copy of the Antwerp Bourse, awarded it the name Royal Exchange, expressly declaring thereby, that it ought not to be called otherwise. Nevertheless, this name commanded such great power that her command was insufficient to prevent it from being commonly called Borsa.⁸⁷

Guiccardini's account is corroborated by John Stow's own version of the incident in his *A Summarie of the Chronicles of England* (1574), according to which Elizabeth I (1533–1603), following a meal with Sir Thomas Gresham, »caused the same Burse by an Harolt of Armes and sounde of Trompet to be proclaymed The Royal Exchange, so to be called from thence forth and not otherwayes«. ⁸⁸ Whether, as Guiccardini insinuates, vanity played a role in this attempt to dissociate it from the Antwerp bourse, need not concern us here.

The early history of the Royal Exchange similarly provides a rich source material for the phenomenon of local fixation and the impact of selective regulatory procedure in speculative trading. Whereas, until the end of the 17th century the Royal Exchange was still regarded as London's central trading place,⁸⁹ speculative trading in shares and government bonds later gradually shifted to the famous coffeehouses in Exchange Alley.⁹⁰ As an early first act of market regulation, a law was passed in 1696 »to restrain the number and the ill practice of Brokers and Stockjobbers«. ⁹¹ With the introduction of this statute, trading was restricted to one hundred licensed *brokers* and stringent trading rules were introduced. There can be no question as to the failure of this regulatory measure, since the majority of brokers operating at the Royal Exchange left in 1698, which led to an unprecedented increase in trading at the coffeehouses.⁹² It was in these coffeehouses that the renewed endeavour to establish an exclusive club of brokers was undertaken. This, in turn, led to the foundation of the London Stock Exchange in 1773, prior to relocation to a trading room in Capel Court in 1801.⁹³ Thus, trading once again shifted from the coffeehouses back to an exchange building.

85 MICHIE (1999) 3; on the Royal Exchanges I–III, cf. the impressive volume edited by SAUNDERS (1997).

86 Guiccardini (1567) 67.

87 The author's translation is based on the German translation of the Guiccardini text by VAN HOUTTE (1981) 238.

88 Cited in NICHOLS (2014) 144–145.

89 See GLAISYER (1997) 198.

90 On coffeehouses: CALABI/KEENE (2007a) 308–309.

91 8 & 9 Will. 3, c. 32 (1697); for more details see SMITH, C. (1929) 210–211; MORGAN/THOMAS (1969); STRINGHAM (2002) 4–5.

92 MORGAN/THOMAS (1969) 26–27.

93 STRINGHAM (2002) 7–10; on the building: PEVSNER (1976) 204 incl. reproduction at 12.32.

2. *The Nineteenth Century: The Heyday of the Exchange Building*

The 19th century is *the* century of exchange buildings, culminating in a dense network of both regional and central exchanges.⁹⁴ In many places, the construction of exchanges meant that for the first time, merchants' meetings were accommodated in a specially designed building. In many cities, monumental *Basilika-Börsengebäude*, as they are called in German architectural literature, became the central hub of emerging capitalism. The exchanges in Trieste (completed in 1806), St. Petersburg (completed in 1816), and the Paris *Palais Brongniart* (see below figure 4, completed in 1826), as well as – to cite a non-European location – the no longer extant First Merchants' Exchange (1827) of Wall Street, New York, number among the formative examples.⁹⁵

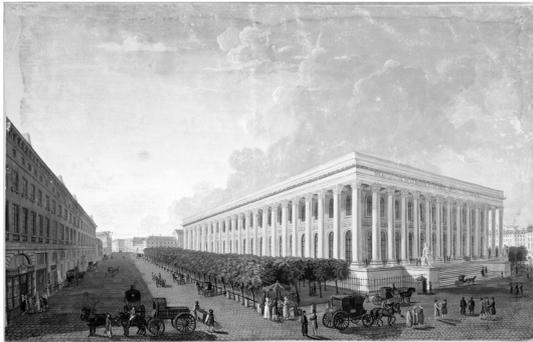


Illustration 4: Palais Brongniart, Paris 1830

Until the 17th century, commodities, government bonds, bills of exchange, and shares were all traded in bourses. Only later were various specialised types of exchanges introduced.⁹⁶ The primary difference was between the newly introduced stock exchange: (*Effektenbörsen* or *Fondsbörsen*, *bourse des valeurs*) on the one hand, and produce exchange (*Warenbörsen* or *Produktenbörsen*, *bourse de marchandises*) on the other.⁹⁷ Bonds,

municipal securities, shares, coupons, dividend coupons, foreign exchange and bills of exchange were traded on the stock exchanges.⁹⁸ By contrast, the basic idea of produce exchanges is that only those goods amenable to standardisation can be traded. Such goods range from cereals, crude alcohol, rapeseed oil, petroleum, sugar, coffee, rye, wool, coal, through to iron and copper.

That the 19th century is *the* century of the exchange building is a fact that pertains, above all, to Germany and Austria. To be sure, exchange buildings existed prior to the 19th century in several of the prominent trading places, such as the *Alte Börse* at the Trostbrücke in Hamburg (1583), the *Alte Handelsbörse* in Leipzig (1687) or the *kleine Börse* at the Heumarkt in Cologne (1730). In Frankfurt, financial transactions were carried out in the open-air in front of the city hall, the so-called *Römer*.⁹⁹ In Germany and Austria, however, modern, comprehensive exchange markets did not emerge until the second half of the 19th century. These, in some cases eruptive, developments coincided with the construction of many monumental exchange buildings.

In 1841, the *Alte Börse* in Hamburg, erected in 1583, was replaced by the *Neue Börse*, which served both securities and commodities trading. In 1843, the *Alte Börse* on Paulsplatz, the first purpose-built exchange, was opened in Frankfurt, replacing the *Börsensaal* in *Haus zum Braunfels*. In 1879, the *Alte Börse* moved to the *Neue Börse* Frankfurt, which is still in operation.¹⁰⁰ From 1864, commodity trading also took place in the *Alte Börse*, and following the move to the *Neue Börse*, the commodity exchange settled in a building in the vicinity, until its dissolution in 1885.¹⁰¹

The *Neue Börse Berlin* was opened in 1863, replacing the meeting places previously located in the *Grotte* in Berlin's Lustgarten (established in 1739) and the *Alte Börse*, established in 1805. By the beginning of the First World War, Berlin had become one of the most important exchanges in

94 Cf. the compilation by AUER (1902) 263–299; for a comprehensive overview: TAEUBER (1911); SCHACHER (1931).

95 On Paris see AUER (1902) 270–272 incl. reproduction on pp. 359–361; on New York see SEVERINI (1981) 31–36 and figures 38–42, and figure 43 on St. Petersburg.

96 On this point see HELLAUER (1920) 236–237.

97 On comparative perspectives on these differences see WEBER (1894) 17–48 = BORCHARDT (1999) 141–156.

98 Cf. BORCHARDT (1999) 143–153.

99 See TRUMPLER (1909) 82; COING (1986).

100 For details, see WORMSER (1919).

101 See LERNER (1962) 38, 44.

the world, alongside its London and New York counterparts.¹⁰² It consisted of three departments housed in different halls but under a common roof: the stock exchange, the commodity exchange and, from 1912 on, the metal exchange.

In Austria, the *Wiener Börse*, designed by Theophil von Hansen (1813–1891), was opened on the Ring in 1877, where securities and commodities (with the exception of agricultural products) were traded.¹⁰³ Exchange trading had earlier taken place at various locations in Vienna. This development is exemplary for many European trading metropolises. The bourse shifted from place to place before finally finding its home in a magnificent building.¹⁰⁴ Thus, when the exchange was first opened by Empress Maria Theresia on the basis of a patent, on 1 September 1771, it was located until 1802 on the first floor of »Zum Grünen Fassel house, at Kohlmarkt in four narrow rooms [...] that were no larger than the offices of a medium-sized storehouse.«¹⁰⁵ After having been housed in several temporary establishments, some at well-known Viennese addresses, the exchange, together with parts of the National Bank, moved into the especially designed *Palais Ferstel on der Freyung*.¹⁰⁶ When the capacity of the Freyung premises proved too small, a temporary emergency building was erected at Schottenring in 1872, in which trading was carried out until the opening of the *Wiener Börse* at Ringstrasse in 1877. This legendary building housed the exchange until the year 2000. Trading in agricultural products, previously transacted at various coffee houses, also known as *Winkel-Fruchtbörsen*, found a central place in 1890 at the Vienna Exchange for Agricultural Products in Taborstrasse.¹⁰⁷ The building bears the same motto as the old exchange in Antwerp: *in usum negotiatorum cujuscunque nationis ac linguae*.

The scope of the present article prohibits a more detailed discussion of the economic history of the German and Austrian exchanges from the 19th century to the present.¹⁰⁸ Here, it must suffice to

point out that the dense network of regional exchanges had all but entirely collapsed by the end of the Second World War. Only Frankfurt was able to maintain its rank as an international financial centre, while Berlin and Vienna failed to regain their pre-First World War stature. It must also be noted that after the Second World War, futures trading in commodities no longer played much of a role in Germany, moving to international commodity markets (Chicago, New York, Paris, London).¹⁰⁹ Efforts to re-establish futures trading in Germany since then have failed, as witnessed by the abortive attempt in 1998 to introduce a commodity futures exchange in Hanover (*Warenterminbörse Hannover* (WTB)), where trading had ceased again by 2009. Currently, commodity derivatives are being traded on the Frankfurt Eurex, and energy derivatives on the European Energy Exchange (EEX) in Leipzig (since 2002).

V. Interior Architecture and Technological Advance

The construction of exchange buildings, some of which significantly altered the municipal structure of metropolises, represents a notable breakthrough in the process of institutionalising market places. They mark the place and time at which trading took place and, ultimately, the context in which the legal framework is to be considered.¹¹⁰ As Wolfram Engels succinctly puts it, the »construction of exchange buildings marks the starting point of a formal exchange organisation.«¹¹¹ The close of the 18th and the early 19th century witnessed a gradual change in the design of exchanges. The buildings' centre was no longer »empty«, as roofs were added to the courtyards, transforming them into indoor spaces geared to the specific requirements of exchange trading. The exchange interiors are now dominated by the metal *corbeille* (basket), as in the Paris bourse, the

102 For details, see BUSS (1913); SPANGENTHAL (1903); BUCHNER (2019); RICHTER (2020).

103 For details, see BALZAREK (1973) passim.

104 See GRANICHSTAEDTEN-CZERVA (1927) passim; BALZAREK (1971) 193–199.

105 GRANICHSTAEDTEN-CZERVA (1927) 1 (author's translation).

106 Cf. GRANICHSTAEDTEN-CZERVA (1927) 3–7.

107 For details, see TREIBL (1908); HELLER (1901).

108 For details, see POHL (1992).

109 Already predicted by GÖPPERT (1918/19) 219 at the end of the First World War.

110 FLUME (2019) 199–245.

Börsenschranke in Vienna and Berlin, and the octagonal pits of North American exchanges.¹¹² It was in these rooms that the characteristic exchange sign language evolved, for which the Chicago Stock Exchange was particularly renowned.¹¹³

The *corbeille*, the *Börsenschranke* or the pit, however, not only created a spatial order of designated meeting points for different types of commodities and securities, as had been done in the Amsterdam bourse with the numbering of columns. They also achieved a market division within the exchange itself.¹¹⁴ The inception of this development dates back to 18th century France. In 1724, following the stock speculation orchestrated by John Law, a state-approved fund exchange was established, the number of *agents de change* restricted, and futures trading prohibited.¹¹⁵ Prior to the French Revolution, the official bourse was located at 6 Rue Vivienne in the *Hôtel de Nevers*, in the former premises of the *Compagnie des Indes Orientales* (French East India Company). According to Robert Bigo, on March 30, 1774, a three-foot-high iron barrier was erected inside the Exchange Room to mark of a space for the exclusive use of *agents de change*, traders and bankers.¹¹⁶ The area separated off by the barrier formed the so-called *parquet*; the space between the entrance and the barrier comprised the *coulisse*. In the *Palais de Brongniart* – the magnificent stock-exchange building first occupied in 1826 – this spatial division was maintained, with the *parquet* and the *coulisse* constituting two different markets.¹¹⁷ The *parquet*, separated off from the rest of the room by the *corbeille*, comprises the official market (*bourse officielle*) organised and mediated by the *agents de change*. The circular *corbeille* is surrounded on all sides by the *coulisse* (also called *marché en banque*) which is accessible to all and thus constitutes the free market (*marché libre*).

This spatial division is mirrored in many European exchanges, as can be seen in the *Wiener Börse* on the Ring, which housed a trading floor and a separate so-called *Arrangementsbüro* (arrangement office).¹¹⁸ The exchange hall was dominated by the



Illustration 5: M. G. Roux, La Corbeille des agents de change à la Bourse de Paris, *L'Univers illustré*, 1865, p. 805 (Palais de Brongniart)

centrally installed, so-called *Schranke* (barrier), a rectangular, cordoned-off area in which the *Sensalen* (accredited brokers) would convene. The transactions brokered by the latter were accordingly referred to as *Schrankengeschäfte* (barrier transactions), and the securities traded exclusively by *Sensalen* were called *Schrankenpapiere* (barrier securities).¹¹⁹ The barrier, in turn, was encompassed by the *Kulisse*, the free market (*Freier Markt*), on which transactions could be carried out without mediation by the *Sensalen*. Next to the exchange hall was the *Arrangementsbüro* operated by the *Wiener Giro- und Kassenverein*. It was used for the clearing processes of futures contracts.¹²⁰

112 On Berlin: HILBRINK (1925) 33–34; on Vienna: GRANICHSTAEDTEN-CZERVA (1922) 17–18; on the US: DUFFIE (1989) 22–23; for detailed discussion, see ENGEL (2016).

113 On hand signals see CARLSON (2013); ERICKSON/STEINBECK (1985).

114 Cf. also the concise diagrammes of the division of the interiors of the Berlin, Paris, London and New York exchanges in PRION (1930) 15.

115 Cf. GRÜNHUT (1885) 8; EHRENBERG (1883) 12–13.

116 BIGO (1930).

117 See HAUTCOEUR/RIVA (2012).

118 Cf. RITTER VON HANSEN (1879) 11.

119 GRANICHSTAEDTEN-CZERVA (1927) 20–23; MEITHNER (1930).

120 Cf. FLUME (2019) 226–227.

Technology, too, made gradual headway inside the exchanges.¹²¹ The introduction of telegraph services and telephones accelerated the flow of information and trading enormously. The early stages in this development, as well as the matter-of-fact spirit in which novel forms of telecommunications were integrated into the routine operations of day-to-day stock market life, are well-illustrated in the following characterisation of the Berlin Exchange of 1913:

The real nerves of the exchange are the telegraph and telephone cables. Should they malfunction, if they are ill, then the entire exchange collapses. Thousands, tens of thousands, hundreds of thousands of marks, if not more, depend upon these simple cables. Thus, the *Reichspost* pays utmost attention to the dispatch and telephone service. The first exchange telephones went into service on 1 April 1881, from which time the number of telephones has increased year to year: the telephone cells housed in the basement in 1885 numbered 88, whereas today they are in excess of 150. Telephone lines were introduced around the turn of the last century, and the efficient broker was quick to

acknowledge their great advantages: each word, clearly and distinctly audible, he promptly ceased telegraphing and used the telephone. The early stages of this transformation saw approximately six million telegrams a year dispatched from the exchange, and whereas today their number has dropped by one third, the telephone shows a perpetually upward curve.¹²²

It was computer technology that was to definitively revolutionise the place and methods of trading. Whereas discussion as to the pros and cons of floor trading – the so-called open-outcry, as opposed to computer-operated exchange – may have still been an issue around the 1970s, in the 21st century, the latter technology has evidently asserted itself in terms of sheer practicality and cost-efficiency.¹²³ The most recent and striking example of this is the CME Group's termination of floor trading for commodity futures in Chicago in 2015 and at the New York Mercantile Exchange at the end of 2016.¹²⁴ The Frankfurt Exchange ceased all floor trading on 20 May 2011, when trading was transferred entirely to the XETRA system.¹²⁵ These are just a few examples among many.



Illustration 6: Trading at the Berlin Exchange in the 1920s

121 On the historical development of technical financial analysis see LO/HASANHODZIC (2010); specifically relating to the exchanges of the 19th century, see ENGEL (2015).

122 BUSS (1913) 147–148.

123 MARKHAM/HARTY (2012); BRUMMER/MARCH (2013).

124 See »Open outcry: is in retreat but futures and options trading-volumes surge«, *Economist*, Jan. 5th 2017; MEYER (2016).

125 PANSTER/SCHNELL (2011).

The implementation of the computer exchange has led to trading being freed from the physical restraints of both the exchange hall and the traders operating within it, whereby the circle of trading participants can be extended indefinitely. At the same time, the anonymity and the speed of exchange trading have been taken to the extreme, since contracting parties are, for the most part, in contact only by means of computer terminals, either operated manually or automated.¹²⁶ The sociologist Karin Knorr Cetina describes this new context of the financial markets as »scoptic systems«. ¹²⁷ Computer terminals, linked to a wide variety of information and data strands, represent a system for monitoring actual markets, which they display on their screens. The globally operating traders, in turn, exert their influence on these actual markets via their terminals. Economist Peter A. Abken pointedly remarked on the effects of the digitalisation of exchange trading as early as 1991:

The globalisation of financial markets simultaneously fragments traditional financial transactions marketplaces and integrates them via electronic means. Physical marketplaces (the trading floors) are becoming obsolete, while »virtual« marketplaces – networks of computers and computer terminals – are emerging as the »site« for transactions. The new technology is diminishing the role of human participants in the market mechanism. Stock-exchange specialists are being displaced by the new systems, which by and large are designed to handle the demands of institutional investors, who increasingly dominate transactions. Futures and options floor traders also face having their jobs coded in computer algorithms, which automatically match orders and clear trades or emulate open-outcry trading itself.¹²⁸

The digitisation of trading has had a major, even radical, effect on the form of exchange trading as we have known it since the 16th century. Not only

has the form of trading been called into question, but ultimately the historically evolved institution of the exchange itself.¹²⁹ What counts now is not physical access and diverse legal regulations governing admission to the exchange building, but the electronic access to a trading system.¹³⁰ It is no longer the exchange that guarantees access to the gamut of liquid markets. Not unlike the old coffee-houses, we now have a multitude of (alternative) trading platforms that are difficult to define and classify, including the infamous »dark rooms«. Thus, stock exchanges are now only one among a number of types of trading sites that financial market regulation has to cover.¹³¹

VI. The End of History?

When looking back over the foregoing five centuries, from the early years of the century to the reality of contemporary electronic markets, we bear witness to a most fascinating process of fundamental transformation. Everything began in the Low Countries: From Bruges we have the name, Antwerp was the first to construct, design and install the actual building and, finally, Amsterdam refined and perfected the institution. From then on, the confines of the courtyard were to physically encompass one of the central mechanisms of the market economy. However, the hectic spaces of the bourses or exchanges were emptied by technological advances, thus rendering the actual physical space of the market superfluous. To be sure, financial transactions analysis will take a different form in the future, since we can no longer simply identify the human actors within the exchange walls. Naturally, this development did not occur overnight. While globally connected markets – or, in other words, global financial cities – are certainly not an invention of more recent processes of globalisation, markets, and more specifically derivatives markets, can be traced back to the 17th-century Amsterdam exchange.¹³² The

126 On the importance of speed in exchange trading and in particular, on high frequency trading, see LEWIS (2014).

127 CETINA (2003) 7–8; CETINA (2012) 116.

128 ABKEN (1991) 19.

129 For the architectural perspective on this pivotal aspect, see MITCHELL (1996); about the current challenges from the legal perspective: FLECKNER (2015).

130 On regulating market access, see ENGEL/FLUME (2020).

131 Cf. FERRARINI/SAGUATO (2015).

132 For a closer elaboration, see FLUME (2019) 229–230; on global cities and global financial centers, see SASSEN (1999); SASSEN (2012); for a historic account on the economics of risk ENGEL (2021).

18th and 19th centuries were formative in the development of a regulatory framework of exchange, and the advance of trading techniques.¹³³ At the beginning of the 20th century, the basis for the field of financial mathematics was established in the seminal works of Louis Bachelier and Vincent

Bronzin.¹³⁴ Computer technology at the end of the twentieth century, eventually, led to an unprecedented leap in magnitude, speed and interconnection of markets worldwide. The rest belongs to the yet to be told future. ■

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133 See FLUME (2019) 209–223.

134 Cf. DAVIS/ETHERIDGE (2006); HAFNER/ZIMMERMANN (2009); on the relevance of financial mathematics for contract law, see FLUME (2019) 115–118.

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