Building Archaeology and Preservation / 建筑考古与保护

The Tangible Golden Age of Amsterdam (1585-1700) / 可触摸的阿姆斯特丹黄金时代 (1585-1700)
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Abstract: Amsterdam is the capital of the Netherlands and was first mentioned in the year 1275. After modest growth in the 14th and 15th centuries, the number of inhabitants grew to ca. 200,000 during the course of the 17th century as the city prospered as never before and became a world leader in international trade. Large-scale urban expansion was the solution to the demand for more space.

Nowadays, the Amsterdam Metropolitan Area has a population of about 2.4 million. The city still identifies itself with its 17th-century city, and presents this particular image to the world. Historic buildings are considered to be essential bearers of the city’s cultural identity. The protection of listed buildings has ensured that large parts of Amsterdam’s city centre, which date back to the 17th century or before, have been preserved. Material authenticity should be preserved if it is to stand a chance of survival. This preservation primarily depends on knowledge, and to obtain knowledge about Amsterdam’s heritage, research is crucial.

Building Archaeology and Preservation: The Tangible Golden Age of Amsterdam (1585–1700)

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As the capital of the Netherlands, Amsterdam is the country’s largest city. It is situated in the heart of the Amsterdam Metropolitan Area, which has a population of about 2.4 million. The city was first mentioned in the year 1275 and, after modest growth in the 14th and 15th centuries, the number of inhabitants grew to ca. 10,000 in the year 1500. The city then expanded to a population of ca. 50,000 around the year 1600, and increased to ca. 200,000 during the course of the 17th century as the city prospered as never before and became a world leader in international trade. Large-scale urban expansion was the solution to the demand for more space. Amsterdam is still widely known for its 17th-century canal belt [Fig. 1].

Preservation of the Historic Urban Landscape

Today, the city of Amsterdam has 853,000 inhabitants and 180 nationalities. Occupancy levels and population increase are extremely topical issues. Middle income bracket households are experiencing difficulty finding housing, investors are getting their hands on a growing proportion of Amsterdam’s real estate and time and again, tourism prognoses are being adjusted upwards. Every year, the Amsterdam museums break their attendance records and the influx of tourists has led to the ‘industrialisation’ of heritage.¹ This creates an increased

Keywords: Building archaeology; Heritage conservation; Holland
demand for tourist accommodation, leads to a rise in Airbnb rentals, and worsens cycling and traffic issues, resulting in a great deal of nuisance, congestion and a decrease in the quality of life for the inhabitants of the city.2

The popularity of Amsterdam’s city centre poses the threat that the city will consume itself; that the heritage industry and tourism will damage historic buildings. This popularity could create a single-sided legitimisation of the past: heritage serves economic interests. If this happens, the city will basically be disconnected from its uniqueness; it will become a product that meets consumer demand. Its uniqueness will start to serve a globalised economic mechanism, adapting to meet the needs of visiting tourists. In this way, commercial motives infiltrate the heritage value system in the same way nationalist motives did for quite some time during the nineteenth and twentieth centuries.3 Apart from the heritage industry, the global sustainability drive will also have far-reaching consequences for the pool of listed buildings over the coming years. A generic standardisation process will develop that leaves less and less room for uniqueness and identity. The city government is trying to deal with all the changes resulting from the industrialisation of heritage while at the same time trying to concentrate large-scale developments in the fringe belt of the city, in order to preserve the historic urban landscape.

As early as the 17th century, Amsterdam’s cityscape was praised by famous poets such as Joost van den Vondel (1587–1679) and Laurens Jansz Spieghel (1575–1623), in descriptions of the city and in drawings, paintings and prints. The city’s impression of itself was far from static and over the course of the 17th century, this shifted towards a more cosmopolitan and multiform entity, with the focus shifting from the old city centre to the canal belt.5 However, until the last quarter of the 19th century, no one reflected on whether part of the city should be preserved, even though it was considered picturesque by individuals. The city was and remained a thing that could be modified to suit people’s needs when conditions demanded it: the city as a utilitarian object.

Generally speaking, this continued to be the case until well into the 20th century. New architecture, the cleaning-up of decrepit neighbourhoods and the creation of a new ideal for life dominated the debate on public spaces at the start of the 20th century.6 A movement developed that wished to do away with the past and abolish all the drawbacks associated with tradition: dark, unhygienic houses, the exploitation of the working class, the huge difference between rich and poor and the conceptual
vacuum regarding new architecture. Old and new battled it out in the arena provided by magazines, societies, discussion fora and politics. This new movement was a widely supported, properly thought-out, convincing attempt to halt the decline.

Yet, there were also other voices. Under the influence of the Romantic era a sentimental love for everything that seemed old and even slightly picturesque developed. Since 1953, this love has been solidified by an official municipal heritage care. In the year 1961, a government act on listed buildings was issued for the protection of historic buildings and sites, which in Amsterdam alone lead to the protection of 7,484 individual buildings. Since the renewal of the monument act in 1988, 1,379 municipal monuments have been added. This has led to a large variety of protected buildings, ranging from the late middle ages to the post-war period up until 1990. Apart from the individually protected buildings, Amsterdam has six protected areas meant to put restrictions mainly on large scale developments that could affect the urban landscape. Individual buildings are now analysed in their historic cultural context because of defined zoning plans. For these protected areas, strict requirements exist for parcel zoning, building heights, roof design and façade design. By doing so, Amsterdam also takes care of the preservation of archaeological values.

The most prominent historic feature of Amsterdam, the 17th-century canal district, was inscribed on the UNESCO World Heritage List in 2010 [Fig. 2]. This canal belt was laid out around the medieval city centre in two stages: one in 1613, the other in 1660. The canal district and Amsterdam’s 17th century are seen as a symbol of an open, liberal society, in which the people — in fact a small group of oligarchs — held the power, independent from kings or emperors. There was relative freedom of speech and philosophers who were persecuted in other countries found a free haven in Amsterdam and could print their work there.
Protection and Interpretation

The romantic appreciation of buildings from the past has social consequences, namely that these buildings — if they are preserved — have to be useable. This has led to thousands of restorations in Amsterdam alone. Restoring basically means repairing to a previous condition; augmenting what has been lost, repairing what is broken. In practice however, this virtually always means something new is being added and the buildings are being modified to meet modern requirements and common perceptions of the past. Buildings outlive their builders, users and the era they were built in. Moreover, they are subject to use, wear and deterioration. If we limit our-selves to listed buildings, every single one is an adaptation and interpretation of what once was, made by later generations projecting their own ideas onto them.⁹

Amsterdam identifies itself with its 17th-century city, and presents this particular image to the world, not the medieval city centre, nor the 19th-century expansions, let alone the post-war expansions. The fact that so much of the 17th century city still exists today is, however, not self-evident. It primarily thanks to the old inhabitants of the different neighbourhoods that so many historic houses remain in Amsterdam. These inhabitants protested against demolitions and the loss of social cohesion in the old city. If certain visionaries had had their way, the city centre would have had a very different appearance today. The western part of the city would have been demolished and a section of the medieval city would have been transformed into a model housing project. In 1972, one alderman declared that he ‘didn’t give two cents’ about the old neighbourhoods.¹⁰ During post-war reconstruction, cheap, standardised pre-fab buildings became the norm; the old, dilapidated city no longer suited the modern utopia of the exemplary ideal society. The building of a subway in the eastern part of the city lead to the demolishing of even more houses and structures, losses that were very hard to recuperate [Fig. 3].
Nowadays, Amsterdam looks back from a certain distance on the 1970s as a tumultuous period in the city’s history. A subway line is once again being built, but this time historic houses are being spared from demolition [Fig. 4]. Not a single house has been demolished for the present construction works. This is a lesson that was drawn from the seventies. Contemporary society now emphatically appreciates the old city; in fact, this appreciation is increasing exponentially. The plans for demolishing the historic city centre have been scrapped a long time ago. We now think of historic buildings as essential bearers of the city’s cultural identity. With the loss of old buildings, we lose a part of our collective identity.

The city’s architectural heritage is a finite collection of historic buildings; a fragile archive exposed to the elements, to which only younger models can ever be added. The city takes good care of many of these buildings by listing them and incorporating them into its cultural heritage. The suggestive power of historic buildings is such that we can be convinced that we are looking at something real. In this respect, visitors are sometimes terribly deceived. Walking around Amsterdam, it seems as if there is an old building on every corner. Upon a closer look, it becomes clear that, for example, the buildings on the corners of Vijzelgracht and Prinsengracht, Reestraat/Keizersgracht, Nieuwe Kerkstraat/Amstel do not date back to a distant past, but are basically the results of the post-war movement that wished to retain the historic cityscape [Fig. 5].
Nevertheless, the protection of listed buildings has ensured that large parts of Amsterdam’s city centre, which date back to the 17th century or before, have been preserved. This is of enormous importance for the academic, ‘historic’ history of the city. Clearly, those who wish to know how the city was built and used cannot do so without the source material of these old buildings. If the city becomes a mere backdrop, it may perhaps be possible to elicit a sense of history, but what that history actually means can in this case no longer be studied and determined. The verifiability of the past is encapsulated in its material and written transmittal. In this sense, the past feeds our curiosity and a need for history, which we believe we can satisfy increasingly well thanks to innovations in research methods and techniques.

It is therefore of crucial importance that we are able to know our history; that old buildings are preserved in their material state, even though they are endangered by multiple external factors. Our understanding of ‘authenticity’ has become less stable since the ICOMOS Nara Conference on Authenticity in 1994. We are seeing a global heritage movement that shapes and ‘improves’ to its heart’s content. According to Nara, everything is possible as long as the narrative of the ‘outstanding values’ can be told in a believable, truthful manner. However, images and narratives are not value-free. This is why, materially speaking, we need history so badly; to allow everyone, today and in the future, to glean their own stories from the past, and time and again. Material authenticity should be preserved if it is to stand a chance of survival. This preservation primarily depends on knowledge, and to obtain knowledge about our heritage, research is crucial.

Architectural Evidence

Amsterdam has a long tradition of building archaeological research. The Office for Monuments and Archaeology emphasises that for the protection of the historic urban landscape, knowledge of buildings is required. And this knowledge can only be obtained by surveys and research of the buildings themselves. Unlike other cities, Amsterdam has a tremendous archive, which contains about 20 km of archive boxes recording the city’s past. Written documents going back to the 13th century, but also drawings, building plans and old publications contain information about Amsterdam’s origins and past [Fig. 6]. Thanks to these sources, researchers can go back to the past and distillate a great deal of knowledge about Amsterdam’s development. But these documents can never replace the historic buildings themselves. The facade and old beams provide us with knowledge
more economical to deepen existing buildings than to purchase scarce building land, but a recurring problem was that cellar floors had a tendency to burst open due to rising groundwater caused by storm tides. The first watertight floating cellars and basement water cisterns were built during the second half of the 17th century. Trass mortar, or hydraulic cement, was needed in order to build these floating cellars: brickwork basins that could be moved up and down with the groundwater level. These cellars were in use until 1871, when the city’s water level was stabilised by the construction of the Oranje sluices. Up until fifteen years ago, however, these unique floating cellars were never recorded. We only gained knowledge about these cellars by doing research in the old canal houses themselves.

Another example: One of the most essential expressions of human culture—building a roof over your head—is characterised by enormous diversity. The development of roofing constructions was a process of natural selection using the materials available in a particular area at a specific time. By having the historic constructions at hand—like the roof construction of the Portuguese Synagogue of 1672—we can actually examine an almost 350-year-old construction. We learn about the way the wood was processed in sawing mills and how it was applied in this specific building, but

that would be untraceable without them. The old building materials, for example, teach us about the way the people of Amsterdam coped with massive water problems [Fig. 7]. The city’s growth resulted in pressure to utilise the available space in merchants’ houses as effectively as possible.
in the classicist architecture of the synagogue. By surveying, measuring, drawing and analysing the roof of this building, we gain insight into one of the masterpieces of Amsterdam carpentry of the 17th century. We learn about statics in the past, but also in the present, because the knowledge that is obtained during building archaeological research is highly essential for restoration plans, when problems with the statics of the buildings have occurred.\footnote{17}

Our old roof constructions show a great variety in detail. They were built with oak and pine wood, had different roofing materials like pan tiles or slates on them, and they could differ depending on whether the building was smaller or taller, or whether the builder had more or less money to spend on his house.\footnote{18}

Due to our building archaeological research, especially documentation of old constructions, we have been able, in the past ten years, to start compiling a typology of roofing constructions in Amsterdam [Fig. 9]. With this, we are much more capable of assessing the historical value of a construction. In other words: how many of a certain type are still left? How rare are they? And how should we proceed during a restoration campaign? On top of that, we managed to obtain reliable dating of our constructions, thanks to the method of dendrochronology. For the last ten years,
the Office for Monuments and Archaeology has been taking wood samples from old constructions in order to determine when exactly houses were built. These samples are analysed in a laboratory and supply us with a dating, so we can put the building or construction in its historical context.\(^{19}\) Apart from that, the analysis gives us information about where the wood came from. And with that knowledge, we can understand more about the whole context that played a role as the Amsterdam canal belt was being built.

Most passers-by in Amsterdam’s canal belt do not realize that the canal-side houses were built using materials imported from many parts of the world. Yet, international trade conducted in Amsterdam had visible effects on the residences in the city. Construction and developments in the building trade were only possible because of the international building materials market. Sandstone from Germany and bluestone from the Ardennes or Hainaut gave façades a more prestigious appearance than could be achieved by using only bricks. Timber from half the countries of Europe was needed for piles, beams and roof structures. Iron from Spain, Sweden and the Harz mountains was the raw material for wall anchors, nails, fire backs and stoves\(^{20}\) [Fig. 10]. Luxury marble from Italy and expensive types of wood from even further afield were used to adorn interiors and give an international flavour to the lifestyle on Amsterdam’s canals.

Trade in timber on a large scale was an essential condition for enabling the construction of so many residences in the canal belt. This colossal construction programme called for massive flows of building materials and in Amsterdam timber and bricks were among the most important construction commodities. During the seventeenth and eighteenth centuries, approximately 2,500 large houses were built on the main canals. A residence that was eight metres wide and twenty metres deep needed at least 120 piles. On top of that, timber was needed for joists and floors, staircases and roofs, and for windows, doors and wainscoting. Huge
numbers of bricks were also required to create the ideal 17th-century way of life along the canals. Brick was the right material for foundations, walls, façades and basement cisterns. Stone was indispensable for decorative elements in façades, doorsteps, fireplaces, floor tiles and sinks. Virtually none of the materials needed for constructing the canal ring were available locally, so the exclusive right to sell building materials, for example Norwegian pine tree trunks, was extremely lucrative.

The bricks used in Amsterdam façades came from various areas. There was no suitable clay in Amsterdam’s environs, so brick making was impossible and the city depended on imports from other parts of the country. Although the products from these sources could differ in appearance, they all seemed to be about the same quality. On 3 October 1613, for instance, City Mason Cornelis Danckertsz said that the bricks made by Arent ten Grotenhuys in his brick-making kiln in Breukelen were usually just as good as bricks from Leiden. It was important, however, to ensure the bricks were properly sorted by quality and size. The ones used for façades were of the highest quality. The substantial volumes that were exported testify to the appreciation that existed in other countries for the quality of Dutch bricks. For example, in the 17th century, England imported large quantities of bricks and roof tiles from the Dutch Republic. It was the same story in Denmark, where Dutch bricks were used to build the Copenhagen Stock Exchange and to restore Kronborg Castle, the Danish king’s palace. Dutch bricks were even exported as far afield as Sri Lanka for building Dutch colonial forts.

Brick was not the only product used to build façades in Amsterdam. Stone was also popular. Anyone who wanted a stone façade had to have his building material shipped from places hundreds of kilometres away, which entailed significant expense. Nevertheless, in the 17th and 18th centuries, at least fifty Amsterdam residents decided to have their façades on Herengracht made in stone. This could be done at the time of construction, but also at a much later time if a new owner chose to have his newly acquired property radically altered.

Almost from the outset, Amsterdam depended on imports for its structural timber. Generally speaking, the distances over which the timber had to be transported were much longer than those for the majority of bricks or the most common types of stone. Moreover, the history of the timber trade
reflects a much greater changeability and unpredictability than the relatively stable commerce in stone, where shifts in demand were more determined by fashion.\textsuperscript{29}

The huge volumes of timber imports were accompanied by transhipment and onward transportation, though much of the timber that arrived was used in Amsterdam. Demand was massive, particularly during the Third and Fourth Stages (1613 and 1660), and this caused periods of scarcity. On 4 August 1619, the glass-maker Jan Hendricksz Soop complained that he had to use pine trunks as firewood and for four months he did not have any wood at all for heating.\textsuperscript{30} In some building projects — such as the Munttoren (Mint Tower) — the available construction timber was in fact not thick enough, so undressed tree trunks were used instead. In some cases old timber was reused, for example in the Noorderkerk (North Church), which was consecrated in April 1623 but for which construction timber dating from 1497 was used.\textsuperscript{31} There were periods of short supply in later years too; in 1659, for example, the scarcity of piles was so severe that the city authorities decided to send two ships to Fredrikstad in Norway immediately with instructions to bring back as many piles as possible.\textsuperscript{32}

The demand on the Amsterdam market and the timber trade in Holland should be seen in a European context. As the demand for timber in one region grew, the strength of the economy in another region — where the construction timber came from — grew as well.\textsuperscript{33} The different areas that exported to the Amsterdam timber market varied in importance, depending on the period and the circumstances.\textsuperscript{34} Quality was the buyer’s prime concern, although price also played a part. Whenever the prices in a particular region increased and timber became harder to obtain, buyers looked for alternatives.\textsuperscript{35} This brought about regular shifts in the geographical centres of gravity in the timber trade. People on the supply side wanted the best possible returns, while those on the demand side wanted the lowest prices. A close eye was kept on every step in the production process, as is evidenced by the fact that in the 17\textsuperscript{th} century, Hollanders purchased short planks in Norway, but transported longer unsawn beams to Holland. The sawing costs to produce short planks were lower in Norway than in the Netherlands. The fact that the waste material did not have to be transported was an additional advantage. The dressing costs increased if larger dimensions were needed, however. In the producing regions, investments in much larger sawmills had to be made, which made working the timber substantially more expensive. As a rule, Norwegian suppliers were not prepared to make such investments. In those cases, the choice was
to import undressed products and to have them sawn up in Holland, where it could be done relatively cheaply as a result of the well-developed timber-sawing industry.\textsuperscript{36}

Some of the wood came from very far away. Deal was imported from Scandinavia, whereas split oak was sourced from the Baltic coast. Walnut came from Southern Europe. Ebony, rosewood and marblewood, however, were tropical products. So too was the hard, self-lubricating lignum vitae, which was used to make pulleys. Ebony came from Sri Lanka, Mauritius, Madagascar, Indonesia and India, and one example dates from as early as 1619. Rio rosewood was shipped from Brazil.

Needless to say, the trade in building materials left its mark on Amsterdam houses. Recognizing these materials is the first step to understanding their origins. These origins were changeable though. The international trade in building materials was subject to continual changes in the economic climate. It was a complex cocktail of supply and demand for products of differing qualities, with dealers keeping a close eye on their profit margins. Merchants and administrators used their extensive international networks to optimize the profitability of the trading in Amsterdam. This could ultimately lead to shifts in the source of a particular product. Armed conflict, boycotts, competition or shortage of supply in the source areas could also result in changes in the trading pattern. And we find evidence of all of these factors back in our houses on the canals.

**Practical Use of Knowledge**

As interesting as the above-mentioned historical knowledge may be, it is used first and foremost to improve the quality of preservation [Fig. 11]. Cultural-historical assessment is an important part of the research conducted by Monuments and Archaeology, making it possible to assess historical values early on in a spatial process.\textsuperscript{37} The building-historical map is a strong instrument to define these values on a general level. It starts from an area-oriented

\begin{figure}[h]
  \centering
  \includegraphics[width=.8\textwidth]{building-historical-map.png}
  \caption{Building-historical map, indicating cultural-historical values in buildings (detail). In red: buildings where historical values are present with certainty. In yellow: buildings where they are expected. In blue: buildings that — as far as we know or expect right now — do not have cultural-historical values.}
  \label{fig:building-historical-map}
\end{figure}
approach analysing both already protected and unprotected areas and shows in red the buildings where historical values are present with *certainty*, in yellow the buildings where they are *expected* and in blue the buildings that — as far as we know or expect right now — do not have cultural-historical values.

On the individual building level, we draw up value assessments, starting with the collection of data; photographs, drawings, archival materials and of course, the survey of the building itself. With these tools, an analysis of the building is made in order to come to a better understanding of its historical development, so that different building phases and layers can be discerned that contribute to the present appearance and the historical significance of the building. In order to come to a value assessment [Fig. 12], the building is analysed on different value levels: general historical values, ensemble values, architectural and building archaeological values as well as values based on the history of use. This assessment is then used to make recommendations on how to treat the object during an alteration or restoration.

It is crucial for the research and assessment to be executed during the initial phase of the development project. Therefore, the heritage office provides as much information as possible as early in the alteration process as possible. An assessment of historical values is already necessary in the initial phase, which means: research. This research leads to understanding and prevents unwelcome surprises later on in the planning process; it inspires designers and architects and leads to a better preservation of heritage.

**Conclusion**

Building archaeological research provides knowledge about the history of the city and its buildings, and creates public appreciation for the urban environment. One of the spearheads of Amsterdam’s municipal government policy is — like almost everywhere on the world — to increase economic benefit. The historic urban landscape serves as

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Fig. 12  Cultural-historical value assessment; the building is analysed on different value levels [from: Guidelines, 2009].
an environment that attracts people: residents, companies and tourists alike. The city is a valuable environment for this, and that is one of the reasons the municipality wants to preserve our historic urban landscape.

The materiality of the urban environment, the housing culture, the objects and their tangibility make up the frame of reference that feeds our field and constitutes the core of our efforts. Without physical, historical material, it will become virtually impossible for future generations to generate an impression of the past with their own eyes. The more historical material we lose, the more the tangibility of the past is lost and the higher the level of abstraction our narrative constructions take on. Building archaeological research is an important contribution to the assessment and preservation of our collective heritage. We make sure the quality of our daily environment is maintained as this constitutes our identity and is an important asset for our place in the world.

Amsterdam is, however, not a museum: the city is in transition every day and is modernised by every generation [Fig. 13]. Nevertheless, we should recognise the past in the city of today and building archaeology is an essential contribution to the preservation of that past, as well as the quality of our present environment.

notes

8. van Sprew, Bas; Gawronski, Jerzy, Ar-
cheologische signaleringskaart Amsterdam, Amsterdamse Archeologische Rapporten 54, Amsterdam, 2010; van Tussenbroek, Gabri; van Drunen, Ad; Orsel, Edwin, ‘Bouwhistorische waardenkaarten. Een gebiedsgerichte benadering van bouwhistorisch erfgoed’, Bulletin KNOB, 111/1, 2012, p. 40–53. The Office for Monuments and Archaeology (MenA) has approximately forty employers, in the field of archaeology, building history, architecture and back office. MenA produces circa 1.200 permits a year for the transformation of listed buildings, and 150 archaeology reports a year, in order to monitor, supervise and document transitions.


Abrahamse, Jaap Evert; Noyon, Roger, Het oude en het nieuwe bouwen. Amsterdam, de markt en de woningbouw, Bussum, 2007, p. 84–87.


Trass is ground tuff from Germany and when used in mortar it prevented water from getting into cellars, which made them suitable for storing goods without risk, even in time of high tides.


In Amsterdam bricks from the area around Leiden and the Vecht region, and also from Gouda and Friesland, were used. Gawronski, Jerzy; Veerkamp, Jørgen, ‘Bakstenen. Bouwstenen van Amsterdam’, in: Gawronski, Jerzy; Schmidt, Freek; van Thoor Marie-Thérèse (eds), Amsterdam. Monumenten & Archeologie 3, Amsterdam, 2004, 10–2 (esp. p. 15–16).


Arntz, ‘Export van Nederlandsche baksteen…’,


29 van Tussenbroek, *Historisch hout…*, as in note 19.

30 van Dillen, *Bronnen tot de geschiedenis…*, as in note 22, p. 300, no. 485.


35 van Bochove, *The Economic Consequences of the Dutch…*, as in note 33, chapter 2.

36 van Bochove, *The Economic Consequences of the Dutch…*, as in note 33, p. 217.