The tradesmen

During the first 100 years (approx.) of the period in question, relatively few building trades were involved in the construction of multi-storey buildings.

Until the end of the 1800s, it involved five principal trades: bricklayers, carpenters, joiners, painters and plumbers. Ultimately glaziers too, although their work was mostly related to that of the joiners and not necessarily connected to the building site. Electricians appeared from around 1900.

Although these trades were still represented on the building site in the mid-1900s, the scope of their involvement had changed significantly, due partly to the increased use of installations in residential buildings, and partly to the way in which materials and structures had changed.

After the 1960s, the factory-based production of almost every building component meant that site-dependent workers could almost be described as being mere fitters of industrial components, and this further changed the internal make-up of the professions and their contribution on the construction site. In addition to this, there was a further degree of specialisation which led to the emergence of not necessarily new trades, but new specialties, for example in jointing work, in the installation of wet room membranes or in the laying of roofing felt. Since the emergence of system/iron scaffolding, the job of the scaffolder has become a specialty, where it was previously part of the bricklayer's work; and bricklayers are no longer the only ones using scaffolding. Finally, mention must also be made of the essential personnel servicing cranes and other machinery on the construction site.
Bricklayers

The brick-built house with load-bearing facades remained dominant until the mid-1900s. The domain of the bricklaying profession was extended at the beginning of the 1900s to include casting with concrete – only course concrete though, since formwork requiring slightly finer casting was the carpenter's domain. This domain was further extended (after the mid-1900s) to include the installation of partially prefabricated concrete floor and staircase structures.

At the same time, however, the bricklayer's overall share of the workload decreased both externally as the extent of building decoration diminished, and internally with the arrival of stucco work; and again when plastering, which had formally been extensive, was no longer required.

The bricklayer's primary materials – clay bricks, lime, sand/gravel and, later, cement – were all local, or at least domestic, materials. Imports were extremely limited and conditional on either local trade links or on the demand for special products.

This was the only building trade to be divided into two groups of workers: skilled bricklayers and general labourers. The bricklayers were responsible for brickwork construction, plastering and roofing with tiles. Labourers assisted the bricklayers by taking care of jobs such as ground excavations, erecting scaffolding, preparing the mortar, carrying materials and cleaning the site.

With the arrival of concrete, the labourers also became responsible for carrying out (course) formwork and casting, and later on, for most of the work involved with partially prefabricated structures.

The heavy work in carrying materials around the site was only facilitated at a much later date with the introduction of hoists and eventually cranes and lifts.

In other building work, where the input from bricklayers was minimal or completely absent, these labourers came to form a separate and (over time) recognised trade of their own: “earth and concrete workers”.

The domain and working methods of the bricklayer changed relatively little over time, but the range of available materials expanded as a result of different production processes in the brick and concrete industry. Hand-moulding of bricks was replaced by machine moulding, tile burning moved from periodic to continuous ovens, and the arrival of artificially manufactured cement led to new stone products and types of mortar other than lime-based.

After the 1960s, the input of bricklayers in multi-storey housing was mostly limited to the building of lightweight concrete walls, tile work, the occasional brick facing of exterior walls and roofing with tiles, in the few cases this happened.

Carpenters
The carpenter’s domain included the coarser wooden structures, such as timbered and boarded walls, joists and roof frames as well as the more detailed jobs, such as staircases and the laying of wooden floors. The inclusion of iron in joist work also fell under the carpenter’s domain as did, later on, the finer timber formwork involved in reinforced concrete structures.

The carpenter’s work also included roofing using felt and, in time, flat or corrugated cement-based sheets.

Most of these jobs, however, were in fact examples of prefabrication, since the formation of timbered walls, joists, roof frames and stairs took place independently of the building site’s other workers, and usually elsewhere. The structures were made (lined out/cast and set) and then separated and transported to the building site, where it was simply a matter of assembling and mounting the individual elements.

During the early decades of the 1900s, jointing in timber structures was still carried out in the traditional way with minimal use of materials other than wood. Thereafter, alternative jointing methods and materials began to gain in popularity.

Similarly, the same work tools were being employed, and it was not until the second half of the 1900s that the first examples of electrically powered hand tools appeared on building sites.

From the 1930s onwards, carpenters faced a diminishing share of the building process with the increased use of materials other than wood (and iron) for storey partitions and internal walls. Still later, the carpenter’s workshop activities were increasingly replaced by industrialised manufacturing methods.

Joiners
The joinery trade was responsible for producing doors, windows and permanent fittings such as kitchen cabinets and also – in a minority of houses – producing wall and (possibly) ceiling panels and laying parquet floors.

Joinery products, far more so than carpentry products, tended to be produced in workshops and by the 1800s were already somewhat characteristic of made-to-stock products. The joiner's work on the building site was limited to the installation of finished elements and otherwise adjusting permanent fittings.

This was the situation throughout this period, except that workshop production was mechanised fairly quickly (by the 1880s the larger towns had already set up the first woodworking factories). Increasing standardisation led to manufacturing conditions that were similar to those in other industries, and door and window factories appeared. This all culminated in the fabrication of fully finished kitchen units in the late 1950s.

The base material for both carpenters and joiners was imported timber. Throughout the 1800s, Danish timber was considered to be an inferior option and it was the other Nordic countries that supplied timber for ordinary house building.

Timber was imported by ship alone throughout the 1800s. Even in the decades thereafter, by far the most common method of transporting wood was by ship. Traditional trading links (which ensured that ships avoided sailing with empty loads) therefore had a certain influence not only on which countries goods were shipped from but also on where they were shipped to.

As a rule, imported wood was (moderately) processed according to the specified needs of the profession. The tree species, dimensions, machining and quality were also determined by the name of the destination port. This means of classification endured right up to the 1900s, even after shipping traffic had ceased to operate according to locally determined conditions.

Painters
By the mid-1800s, the painter's domain included the surface treatment of virtually every product, with building work comprising only part of this.

With the rise of industrialisation and, accordingly, specialisation, paint treatments were specific to individual manufacturing companies. Consequently, by the beginning of the 1900s people started to talk about house painters as a separate trade.

In terms of final surface treatments in building work, the painter's job remained virtually unchanged up to the 1960s, but increased in volume due to the continuous rise in the number of installations. Any wood that was visible externally or internally was painted or varnished/lacquered. All internal wall surfaces were papered or painted, ceilings were whitewashed and, in addition, the multitude of (visible) pipework received some sort of paint treatment. All of this work was carried out on the building site and in the majority of cases involved several coats for each building element.

Around the mid-1800s the painter produced the vast majority of his own materials. Towards the turn of the century, production became more industrialised, though units

remained small and determined by local conditions. The few larger paint manufacturers belong to the latter half of the 1900s.

The prefabricated construction that characterised multi-storey housing in the 1960s completely changed the nature of the painter's input. Joinery work was now starting to be delivered to the building site fully finished, as were frames, skirting boards and every other kind of mounting strip. The popular beech parquet floor was also being delivered pre-lacquered.

Plumbers
Plumbers do not fall under the traditional building trades. The base materials of the plumber were originally thin metal sheets of iron, copper, zinc and brass. From these, he produced a large number of household items that were in common use in times gone by.

The trade first gained some importance in town building towards the end of the 1700s with the emerging use of gutters and metal drainpipes, and later, with the use of flashing on slate roofs.

However, from the mid-1800s, the profession's contribution to the construction industry increased, due partly to the widespread use of (almost) horizontal metal-covered roofs, and partly to the arrival of the many new installations in the period after 1850.

This began with the introduction of water, then gas (initially used for lighting only, but shortly after for cooking as well), followed by the installation of water closets.

Then came central heating and domestic hot water, bathrooms with yet more installations and, lastly, the expanding use of mechanical ventilation. This is the profession that we know today as HVAC.

The plumber's workshop activities in the context of construction work were limited to the processing of sheet metal, i.e. the production of gutters, drain pipes and flashing, and this remained the case until production was taken over by the factories.

The remainder of the plumber's work was undertaken on the building site proper. This predominantly involved the adjustment and fitting of other, industrially manufactured, materials (drawn and cast iron pipes) and components (sinks, stopcocks, toilet bowls and radiators, etc.).

Excluding (major) changes in the selection of available materials and components, the work did not undergo significant change in the period up to the 1960s.

Individual buildings in the 1950s saw the first experimental attempts at installing toilets/bathrooms as complete components. In subsequent prefabricated constructions, HVAC installations were often embedded and, later, predominantly "concealed" in shafts, under floors or inside fittings.

In return, painting was carried out on any interior pipework left visible.

Glaziers
The glazier's work in the context of ordinary house building was purely limited to the

supply and installation of glass panes. His contribution on the building site could be even smaller, being limited to the installation of glass panes in fixed frames – inserting glass into moveable frames was not necessarily construction site work.
Window glass was produced manually until the end of the 1800s.

It was made by blowing a bottle, which was then cut off from the blowpipe and attached to a rod. As the rod was rotated, the molten glass was thrown into a circular plate, from which the square panes (ideally) were cut: the result was the well-known Dannebrogsvindue ("Danish flag window"), a barred casement window with larger subframes.

Towards the turn of the century, machine-drawn glass appeared, and this method of manufacture meant that normal flat glass for windows could be obtained in previously unimagined sizes.

As a result, the subdivided glazing bars in moveable frames disappeared, and new types of window appeared with (very) large panes mounted in fixed frames and flanked by smaller moveable frames.

Some time later the production method changed again into the one we know today, where molten glass is slowly fed and cooled over a layer of molten tin.

The use of double windows had been known of since the end of the 1800s, often as loose sections for mounting during the winter months. Double casement windows became more widespread in the 1920s and not just in new buildings: they were also used in the improvement/modernisation of existing buildings.

Windows with two layers of glass in coupled frames appeared in the 1930s and became the norm until windows with double-pane units (double glazing) superseded them in the 1960s.

Electricians
The first electricity-generating stations appeared in Copenhagen in the 1880s. They were privately operated and limited to supplying a single block. By the next decade, municipally operated stations appeared in the larger towns and a completely new trade came into being: the electricians.

As one of the mainstay building trades, the electrician was the only one whose work from the outset was carried out entirely on the building site.

Electrical installations in early (multi-storey) housing were limited to lighting. Installations in individual homes were generally limited to wires laid in a terminal strip along the ceiling and walls in the hallway/corridor, and from there led to connectors in metal pipes laid in the storey partitions or drilled into walls.

During the 1930s electrical equipment started to appear in kitchens (refrigerators, ovens and hobs), later followed by an increasing array of electrically powered small appliances. All in all, this resulted in more work for the electrician, but the job remained essentially unchanged in that it involved the laying and drilling of pipes and eventually the installation of power switches or permanent fittings.

Only with the use of prefabricated concrete elements and the embedding of pipes in the 1960s did the work change slightly, with some of it being moved to the factory.

As for buildings in general, the electrical operation of shared facilities such as laundries – as with the later requirement for mechanical-only ventilation – simply led to an increased workload.

Films on techniques
Many of the trade techniques used in the traditional building trades have been documented in film and are available at Byggefilm.dk.