

1 Origins and development of the organ

Nicholas Thistlethwaite

Organ . . . the name of the largest, most comprehensive, and harmonious of musical instruments; on which account it is called ‘the organ’, *organon*, ‘the instrument’ by way of excellence.
(Charles Burney, writing in A. Rees, *The Cyclopaedia, or Universal Dictionary of Arts, Sciences, and Literature*, London 1819)

Although modern etymologists would question Burney’s appropriation of a Greek word with a general meaning (*organon* seems to have meant a tool with which to do a job of work) for so specific a purpose, it would be hard to deny that the pipe organ in its most developed form is structurally the largest, and (for sheer variety of effect) musically the most comprehensive of all instruments. And if by ‘harmonious’ is meant the capacity to order diverse elements and bring them into concord with one another for a common purpose, then Burney’s claim for the organ, with its multiplicity of sound-producing and mechanical parts, can surely be substantiated.

At its most basic, the organ is a simple wind instrument. It consists of a grooved chest supporting a set of pipes, bellows to supply wind to the pipes, and some sort of mechanism to cause the pipes to sound. Though such simplicity is now rare it perfectly well describes the sort of organ depicted in medieval illuminated manuscripts (Figure 1.1). The path from such modest instruments to giant modern organs boasting four or five keyboards, 32’ pipes, dozens of registers, sophisticated stop controls and electrical blowing apparatus encompasses a complex and fascinating process of development in which music, technology, architecture, liturgy, industrial organisation and changing taste all play a part.

Certain things follow from this long historical development.

First, at any given period, styles of organ throughout Europe (and it is Europe with which we are principally concerned before 1850) varied considerably. Fifty years ago it was widely assumed that any pre-nineteenth-century German organ was suitable for the performance of Bach. Today, we are becoming more aware of the distinct characteristics of organs built in Swabia and the Rhineland, Hamburg and Westphalia – and perhaps none of them is altogether appropriate for Bach, who spent most of his working life in Thuringia and Saxony. Repertoire must be related carefully to the type of instrument for which it was conceived: not

[1]

2 Nicholas Thistlethwaite



Figure 1.1 A detail of an illuminated initial from a Book of Hours of King Alfonso V of Naples (Aragon, 1442; British Library MS Add. 28962, fol. 281v). This portrayal of a positive organ appears immediately below a scene depicting the celebration of a mass in the royal chapel of the Aragonese court, and is probably indicative of the type of instrument used in such circumstances.

because this determines how it must be played today (which it does not) but because it offers an opportunity to understand more fully the intentions of the composer and the experience of the original player. From this informed position intelligent decisions can be made about modern performance.

Secondly, historic organs (with few exceptions) possess their own building history. We still know little about the ‘ageing’ process as it affects organs; change must be assumed in the molecular structure of pipe metal, and that may affect the tone. More obvious is change brought about by human intervention. Compasses, temperament, pitch, wind pressure and voicing are all matters that can be altered relatively easily in response to changing fashion, even when more drastic alterations are avoided. Nor is restoration necessarily a guarantee of authenticity. Old organs restored in the 1950s and 60s are now being restored again. (The famous F. C. Schnitger organ of 1723–6 in St Laurens, Alkmaar was restored by Flentrop in 1947–9, and again in 1982–6 to more exacting standards.) Whether current restoration techniques will be regarded as adequate in

3 *Origins and development of the organ*

another fifty years time remains to be seen. Claims to historical correctness should always therefore be treated with some caution, though few old organs will fail to yield some valuable insights for the player.

Thirdly, with a documented history going back at least a thousand years, and an archaeological history spanning six centuries – setting aside such fragmentary remains as the cache of medieval organ pipes found at Bethlehem (Williams 1993: 348–9) and the earlier Graeco-Roman organ found at Aquincum in Hungary (Perrot 1971: 109–16) – the organ has benefited from a succession of technological innovations. At the end of the medieval period new techniques of carpentry, metalwork and bellows-making were exploited by organ builders for their own purposes (Williams 1993: 314–35). Four hundred years later, their successors were using steam-driven machinery in their workshops, and experimenting with pneumatics and electricity (Thistlethwaite 1990: 61, 351–61). Today, many organ builders take advantage of computer technology in both the design (computer-simulation in the drawing office) and equipping (multi-level memory systems, playback facilities, transmission) of organs. This suggests the wisdom of keeping an open mind about such technological developments. The pneumatic lever, for instance, is an integral feature of the nineteenth-century Cavaillé-Coll organ, which itself inspired an important school of organ composers at least in part because of the flexibility the pneumatic motors gave to these ambitious instruments. For the same reason, contemporary console developments in new organs are not to be condemned out of hand just because there is no precedent for them in the organ's earlier history. Probably the strongest objection that can be made to them is that they can seem to diminish the gap between the legitimate pipe organ and a variety of electronic keyboard instruments which endeavour to reproduce its effects.

In the following chapters, a good deal of attention will be devoted to particular repertoires and the instruments for which they were written. It may therefore be found helpful to have a brief summary of the organ's historical evolution with special reference to those technological innovations which created new opportunities for composers and performers, and which, taken together, assist us in defining the genius of this 'largest, most comprehensive, and harmonious of musical instruments'.

The medieval organ

The origins of organ technology and the type of instruments to which it gave rise in the earlier medieval period have been discussed elsewhere, notably by Jean Perrot (1971) and Peter Williams (1993). Here, it must

4 Nicholas Thistlethwaite

suffice to say that organs had found their way into churches by the end of the tenth century, when several Anglo-Saxon monasteries (Malmesbury, Ramsey, Winchester) are known to have possessed them. However, their construction and the uses to which they were put (signalling devices, like bells; the expression of jubilation in the liturgy?) remain obscure.

Organs gradually spread throughout Europe, though the date of reception and the degree of mechanical sophistication must have varied considerably from one region to another. Probably the Benedictine order, with its interest in the useful arts, technology and science, played an important part in disseminating knowledge about organs. If so, it should not surprise us that the most comprehensive account of organ-building before the fifteenth century was written by a monk named Theophilus, who seems to have lived in what later became Westphalia in the period 1110–40. His treatise (which is part of a much longer work entitled *Diversarum Artium Schedule*) describes the manufacture of copper pipes, a wind-chest with seven or eight notes, wooden sliders projecting from the chest and lettered so that the player knew which note he was sounding, bellows, a wind collector (*conflatorium*) and a hollow wooden duct to convey wind to the chest (Perrot 1971: 232–52).

The evolution over the next three centuries of this simple (but in its own terms doubtless effective) sound-producing instrument into the early modern organ with its multi-ranked *Hauptwerk*, a *Rückpositiv* with separately-drawn registers, Pedal *trompes* (bourdons), extensive keyboard compasses and a variety of pipe constructions was a complex process which there is not space to discuss here (but see Williams 1993: 336–57). However, certain crucial developments need to be briefly mentioned.

The *soundboard* is a large box on which the pipes are mounted, and which supplies them with wind. In early organs, wind was admitted to the pipes by means of sliders running in grooves beneath each pipe or set of pipes and operated directly by the player. By c1400 (possibly earlier) pallets had made their appearance. A small wooden clack-valve was located beneath each groove; when the player caused this pallet to open, wind entered the groove and the pipe(s) sounded. The connection between key and pallet was made by means of linkages known as trackers, and with the development of rollerboards to convey the action sideways it became possible to arrange the pipes in a different sequence from that dictated by the keyboard. It also enabled organ builders to make larger soundboards and to accommodate more and bigger pipes on them. Ultimately, these technological developments encouraged the multiplication of soundboards in an instrument; sometimes they were connected to a single keyboard, but in north-west Europe after c1450 it became

5 *Origins and development of the organ*

increasingly common to find organs with two or three keyboards and a Pedal division.

Meanwhile *sliders* found a new role in enabling the player to shut off individual registers or groups of pipes. The large church organs of the later medieval period incorporated massive choruses (*Blockwerk*) in which each note sounded multi-ranked unisons and quints. Henri Arnaut de Zwolle (c1450) describes organs with between six and twenty-six pipes to a note (inevitably including much duplication of pitches). By his time some attempts were being made to split up the *Blockwerk* into groups of pipes, for example, a division into three: principals (8's + 4's), low-pitched mixture, high-pitched mixture. By making soundboards with sliders running at right angles to the grooves, organ builders gave players the means of shutting off groups of pipes. Only after 1500 did 'stops' come to be thought of as bringing registers on rather than shutting them off.

In some parts of Europe (notably Italy) a second set of pallets was preferred to the slider. Each note of a register had its own spring-loaded pallet which opened when the player brought the stop on. As soon as the player released the lever or knob the springs closed the pallets, silencing the register. Soundboards of this type were known as *spring-chests*. They were seldom made outside Italy after the sixteenth century.

Keyboards and *compasses* evolved in response to the changing technology of soundboards and actions, and the desire of musicians to play polyphony. It is not known whether keys were ever 'thumped' with the whole fist as used to be suggested, but there can be little doubt that the early organs with their crude engineering would require some force to operate, whether the player pulled sliders or pressed keys. Theophilus's organ had seven or eight notes operated by sliders. Over the next three centuries compasses gradually expanded, the diatonic scale with B \flat added to accommodate plainsong giving way after c1300 to (sometimes incomplete) chromatic compasses. By c1450 a compass of rather more than three octaves (F–a²) was widespread, though pitch varied greatly, and some of these organs were undoubtedly transposing instruments. An example was Anthony Duddyngton's new organ for All Hallows, Barking, London (1519); the keyboard had C as its lowest key, but the note it sounded was F (5') or FF (10'). It is important to realise that compasses and keyboards are not necessarily all that they appear to be in the years before 1650, and sometimes later.

The introduction of pallets in place of sliders enabled organ-builders to develop keyboards which could be both elegant in appearance and subtle in action. The Halberstadt keys (Figure 1.2) perhaps represent a transitional phase (the upper set still resemble the pull-push levers of earlier illustrations) but another picture in Praetorius's *Syntagma*

6 Nicholas Thistlethwaite

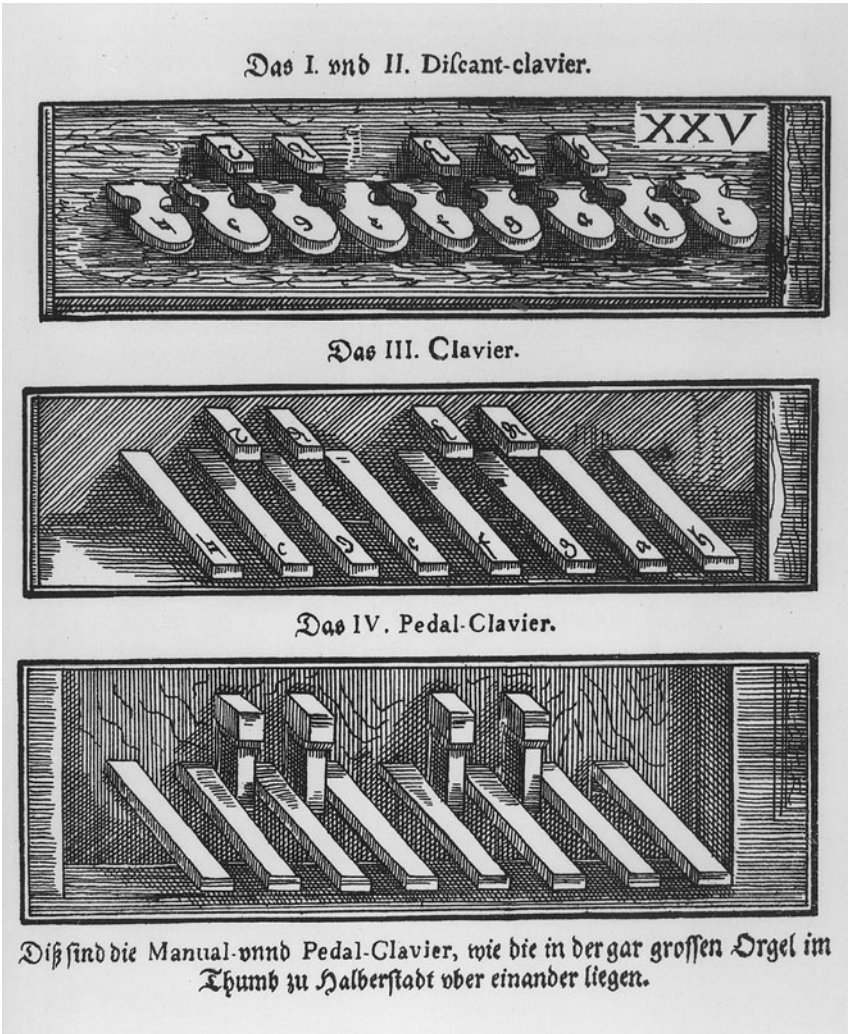


Figure 1.2 An illustration from Michael Praetorius's *Syntagma Musicum* of 1619, showing the manual and pedal keyboards of the organ at Halberstadt Cathedral, which he believed to date from the work of Faber in 1361.

musicum (Figure 1.3) shows a style of keyboard for the *Rückpositiv* at the Aegidienkirche, Brunswick (1456) which would not change radically before the nineteenth century.

Other significant developments included the appearance of new *pipe forms* including reeds (the earliest firm evidence is c1450) and wooden registers (possibly at a similar period, though equally possibly much earlier). In part this was due to increasing confidence in the manufacture of pipework, in part to the growing taste for novel tonal colours (in some regions, at least) to which Arnolt Schlick's *Spiegel der Orgelmacher und*

XXVIII

e f g b

f g a b

Clavier zum Rückpositiſtief in derſelben Orgel S. Egidii zu Draunſchweig.

Organisten (Mainz 1511) was later to bear impressive testimony. *Organ cases* probably began to appear in the thirteenth century (Williams 1993: 322–3). If organs were not located on the floor near the singers – as most positive organs were – they would be placed in wooden galleries from which the organist could command a view of the liturgical action (reflecting the organ's growing importance in liturgy). These instruments whether raised or at floor level required architectural treatment, and surviving cases such as those at Sion (c1435), the Jakobikirche, Lübeck (c1480) and San Petronio, Bologna (1474–83) illustrate the relish with

8 Nicholas Thistlethwaite

which carpenters and decorative artists approached the task. The design of *bellows* must have been refined to meet the needs of the large organs being built by the mid-fifteenth century, though little is known about this. Small forge-bellows made of animal skins gave way to larger wedge-bellows with ribs and boards, raised by levers. Ropes seem also to have been used, but whatever the method, the fact that the wind was fed directly into the chest must have led to considerable unsteadiness of speech – a problem that was not overcome until the introduction of the reservoir in the eighteenth century.

Yet for all its imperfections, the technology of the early modern organ was essentially complete by c1450. It is a remarkable tribute to medieval enterprise and craftsmanship that no significant innovations in the basic design of the organ were made for the next three centuries.

The early modern organ (1500–1740)

Any scrutiny of organ schemes from the first half of the sixteenth century reveals great diversity of practice. Despite this, two ‘families’ of organ types can be distinguished. In Italy and southern France, organs with a single keyboard, spring chests and separately drawn registers were the norm; this ‘southern’ type was also influential in parts of Spain and southern Germany. In the north (the Netherlands, northern France, Scandinavia and much of Germany) larger organs with two or three keyboards, multiple chests, pedals, multi-ranked principal choruses and an extensive selection of colour stops – often imitations of other instruments – were common. (A variant of this ‘northern’ type was found in Spain during the years of Spanish rule in the Netherlands.)

The sixteenth century was a period of intense activity and bold experimentation in organ building. Builders explored, refined and extended the techniques of their medieval forebears to meet new demands. In many wealthy towns of northern Europe organs became status symbols, provided, maintained and played under the direction of the civic authorities; tonal novelties, daring mechanical layouts and splendid casework were deployed to add lustre to the town’s reputation.

Organ builders often travelled widely in pursuit of work and new ideas. In particular, builders from the Low Countries – that cradle of European organ building – worked extensively outside their native region. Hendrik Niehoff built influential organs in Hamburg (1550) and Lüneburg (1552), Nicolaas Niehoff at Cologne (1573). Nicolaas Maas spent the majority of his working life (1590–1615) in Denmark. The Brebos family built important organs in Spain (1579–92) whilst Jan and

9 *Origins and development of the organ*

Matthijs Langhedul and Crespin Carlier laid the foundations of the French classical organ in the years to either side of 1600. Altogether, these Dutch and Flemish craftsmen had a vital influence on the regional schools of organ-building which (like the corresponding nation states) had begun to emerge before the end of the sixteenth century.

Organ-building was not unaffected by politics (the existence of the Habsburg Empire facilitated a free trade in ideas between craftsmen and artists within its borders). But it was more immediately and directly influenced by religious change – of which there was a great deal in the sixteenth and seventeenth centuries. The upheavals of the Protestant Reformation and Catholicism's spirited response, the Counter-Reformation, had profound implications for the role of the organ in worship (see below, Chapter 9). Design is driven by function, and the particular ecclesiastical demands of the different traditions played a major part in determining the character of regional organ schools.

This can be illustrated by comparing four different organ cultures.

The Netherlands experienced some destruction of organs in the riots of 1566, and more were removed from churches in succeeding years under the influence of the Calvinists. However, the fact that they were usually the property of the town helped to protect many organs, and although the Reformed Church at first refused to countenance their use in worship, in most towns they continued to be played before and after the service and in weekday recitals that had long been a feature of Dutch municipal life. So organs were built and repaired, and distinguished players such as J. P. Sweelinck were able to exploit the resources of the Dutch organ (weighty *plenum*; flutes, reeds and imitative registers in *Rugpositief* and *Bovenwerk*; Pedal solo stops) in variations on psalm tunes, decorated transcriptions of vocal pieces, and improvisations (Peeters and Vente 1971: 88–122).

In England, by contrast, the Puritans (radical Calvinists) had all but succeeded in having organs banned from churches in 1563. They failed, but organ building languished for most of Elizabeth's reign until the emergence in the 1590s of a party determined to restore something of 'the beauty of holiness' to the worship of the Established Church. The primary role of organs built under its influence was the accompaniment of the surviving cathedral and collegiate choirs in the daily services of Matins and Evensong. The instruments were correspondingly unadventurous. They lacked pedals, and relied instead on long manual compasses. Most had a single keyboard with five or six stops, though the occasional provision of a Chair Organ extended the scope a little. There were no mixtures, mutations or reeds, but duplication of chorus registers was usual. Such an instrument provided adequate accompaniment for a small group of

10 Nicholas Thistlethwaite

singers and permitted the performance of short voluntaries – which was all that was required (Bicknell 1996: 69–90).

Lutheranism had no single view about the appropriateness of organ music in worship. Where it was permitted (perhaps the majority of Lutheran churches) the organist was encouraged to play preludes – sometimes at considerable length – before the congregation sang an unaccompanied chorale. Interluding between verses, *alternatim* performance, and choir accompaniment were also common requirements. The organs of northern and central Germany, with their large Pedal divisions, massive *plenums*, and subsidiary manuals stocked with flutes, mutations and reeds, equipped the organists for a multitude of liturgical tasks, and the strongly marked distinction of pitch, placement and tone between the different departments was particularly valuable in an instrument required to be so versatile.

The French organ also relied upon colour and contrast, but for different reasons. France had remained within the Catholic fold, and French organs were required to accompany the mass and other liturgical offices, performing music in which plainsong themes figured prominently. In particular, the organ performed movements of the mass in alternation with voices (see Chapter 9). Solo registrations were functionally important for ‘bringing out’ a plainsong theme (hence, for example, the *Tierce en taille*, the flûtes and trompettes 8’ of the Pédale, the popularity of the *Cornet* and the appearance of short-compass solo divisions – *Écho* and *Récit* – in the early seventeenth century) and rigid conventions grew up concerning the use of particular registrations for particular movements of the mass. ‘Every stop in a French organ of about 1700 came to have an appointed purpose’ (Williams and Owen 1988: 105) and this purpose was entirely dictated by liturgical use.

These brief summaries give an indication of the highly specific background to the emergence of regional schools of organ construction, design, composition and performance in post-Reformation Europe. They will be discussed more fully below, in relation to the repertoires. Many of the organ types they fostered came to maturity in the second half of the seventeenth century: the Hamburg *Werkprinzip* organ in the work of Arp Schnitger (*fl.* 1666–1719), the French classical organ at the hands of Pierre and Alexandre Thierry and Robert Clicquot (from the 1650s), the Spanish baroque organ with its horizontal reeds and echo organs made by various builders after 1680, and the English long-compass organ developed – in conscious rivalry with one another – by Bernard Smith and Renatus Harris during the 1670s and 80s. In other parts of Europe taste, relative affluence, liturgical priorities, musical innovation and news of developments elsewhere had an impact on local traditions. By 1700 a