= Pipe organ =

The pipe organ is a musical instrument that produces sound by driving pressurized air (called wind) through organ pipes selected via a keyboard . Because each pipe produces a single pitch , the pipes are provided in sets called ranks , each of which has a common timbre and volume throughout the keyboard compass . Most organs have multiple ranks of pipes of differing timbre , pitch , and volume that the player can employ singly or in combination through the use of controls called stops .

A pipe organ has one or more keyboards played by the hands (called manuals) , and a pedalboard played by the feet ; each keyboard has its own group of stops . The keyboard (s) , pedalboard , and stops are housed in the organ 's console . The organ 's continuous supply of wind allows it to sustain notes for as long as the corresponding keys are depressed , unlike the piano and harpsichord whose sound begins to dissipate immediately after it is played . The smallest portable pipe organs may have only one or two dozen pipes and one manual ; the largest may have over 20 @,@ 000 pipes and seven manuals . A list of some of the most notable and largest pipe organs in the world can be viewed at List of pipe organs .

The origins of the pipe organ can be traced back to the water organ in Ancient Greece , in the 3rd century BC , in which the wind supply was created with water pressure . By the 6th or 7th century AD , bellows were used to supply organs with wind . Beginning in the 12th century , the organ began to evolve into a complex instrument capable of producing different timbres . A pipe organ with " great leaden pipes " was sent to the West by the Byzantine emperor Constantine V as a gift to Pepin the Short , King of the Franks , in 757 . Pepin 's son Charlemagne requested a similar organ for his chapel in Aachen in 812 , beginning the pipe organ 's establishment in Western church music . By the 17th century , most of the sounds available on the modern classical organ had been developed . From that time , the pipe organ was the most complex man @-@ made device - a distinction it retained until it was displaced by the telephone exchange in the late 19th century .

Pipe organs are installed in churches , synagogues , concert halls , schools , and other public buildings . They are used in the performance of classical music , sacred music , secular music , and popular music . In the early 20th century , pipe organs were installed in theaters to accompany the screening of films during the silent movie era ; in municipal auditoria , where orchestral transcriptions were popular ; and in the homes of the wealthy . The beginning of the 21st century has seen a resurgence in installations in concert halls . The organ boasts a substantial repertoire , which spans over 500 years .

= = Construction = =

A pipe organ contains one or more sets of pipes , a wind system , and one or more keyboards . The pipes produce sound when pressurized air produced by the wind system passes through them . An action connects the keyboards to the pipes . Stops allow the organist to control which ranks of pipes sound at a given time . The organist operates the stops and the keyboards from the console .

= = = Pipes = = =

Organ pipes are made from either wood or metal and produce sound (" speak ") when air under pressure (" wind ") is directed through them . As one pipe produces a single pitch , multiple pipes are necessary to accommodate the musical scale . The greater the length of the pipe , the lower its resulting pitch will be . The timbre and volume of the sound produced by a pipe depends on the volume of air delivered to the pipe and the manner in which it is constructed and voiced , the latter adjusted by the builder to produce the desired tone and volume . Hence a pipe 's volume cannot be readily changed while playing .

Organ pipes are divided into flue pipes and reed pipes according to their design and timbre . Flue pipes produce sound by forcing air through a fipple , like that of a recorder , whereas reed pipes produce sound via a beating reed , like that of a clarinet or saxophone .

Pipes are arranged by timbre and pitch into ranks . A rank is a row of pipes mounted vertically onto a windchest . The stop mechanism admits air to each rank . For a given pipe to sound , the stop governing the pipe 's rank must be engaged , and the key corresponding to its pitch must be depressed . Ranks of pipes are organized into groups called divisions . Each division generally is played from its own keyboard and conceptually comprises an individual instrument within the organ .

= = = Action = = =

An organ contains two actions , or systems of moving parts . When a key is depressed , the key action admits wind into a pipe . The stop action allows the organist to control which ranks are engaged . An action may be mechanical , pneumatic , or electrical (or some combination of these , such as electro @-@ pneumatic action) . The key action is independent of the stop action , allowing an organ to combine a mechanical key action along with an electric stop action .

A key action which physically connects the keys and the windchests is a mechanical or tracker action . Connection is achieved through a series of rods called trackers . When the organist depresses a key , the corresponding tracker pulls open its pallet , allowing wind to enter the pipe .

In a mechanical stop action , each stop control operates a valve for a whole rank of pipes . When the organist selects a stop , the valve allows wind to reach the selected rank . This control was at first a draw stop knob , which the organist selects by pulling (or drawing) toward himself / herself . This is the origin of the idiom " to pull out all the stops " . More modern stop selectors , used for electric actions , are tilting tablets or rocker tabs .

Tracker action has been used from antiquity to modern times . Despite the extra effort needed in playing , many organists prefer tracker action because of a feel and a control of the pipe valve operation . Before the pallet opens , wind pressure augments tension of the pallet spring , but once the pallet opens , only the spring tension is felt at the key . This provides a " breakaway " feel .

A later development was the tubular @-@ pneumatic action , which uses changes of pressure within lead tubing to operate pneumatic valves throughout the instrument . This allowed a lighter touch , and more flexibility in the location of the console , within a 50 @-@ foot (15 @-@ m) limit . This type of construction was used in the late 19th century to early 20th century , and has had only rare application since the 1920s .

A more recent development is the electric action which uses low voltage DC to control the key and / or stop mechanisms . Electricity may control the action indirectly through air pressure valves (pneumatics) , in which case the action is electro @-@ pneumatic . In such actions , an electromagnet attracts a small pilot valve which lets wind go to a bellows (" pneumatic ") which opens the pallet . When electricity operates the action directly without the assistance of pneumatics , it is commonly referred to as direct electric action . In this type , the electromagnet 's armature carries a disc pallet .

When electrical wiring alone is used to connect the console to the windchest , electric actions allow the console to be separated at any practical distance from the rest of the organ , and to be movable . Electric stop actions can be controlled at the console by stop knobs , by pivoted tilting tablets , or rocker tabs . These are simple switches , like wall switches for room lights . Some may include electromagnets for setting or resetting when combinations are selected .

The most modern actions are primarily electronic , which connect the console and windchests via narrow data cables instead of the larger multiconductor cables of electric actions . Boxes containing small embedded computers in the console and near the windchests translate console commands into fast serial data for the cable , and back into electrical commands at the windchest [s] .

= = = Wind system = = =

The wind system consists of the parts that produce , store , and deliver wind to the pipes . Pipe organ wind pressures are on the order of 0 @.@ 10 psi (0 @.@ 69 kPa) . Organ builders often measure organ wind using a U @-@ tube manometer containing water , so commonly give its

magnitude as the difference in water levels in the two legs of the manometer , rather than in units of pressure . The difference in water level is proportional to the difference in pressure between the wind being measured and the atmosphere . The 0 @.@ 10 psi above would register as 2 @.@ 75 inches of water (70 mmAq) . An Italian organ from the Renaissance period may be on only 2 @.@ 2 inches (56 mm) , while (in the extreme) solo stops in some large 20th @-@ century organs may require up to 50 inches (1 @,@ 300 mm) . In isolated , extreme cases , some stops have been voiced on 100 inches (2 @,@ 500 mm) .

Playing the organ before electricity required at least one person to operate the bellows . When signaled by the organist , a calcant would operate a set of bellows , supplying the organ with air . Because calcants were expensive , organists would usually practise on other instruments such as the clavichord or harpsichord . By the mid @-@ 19th @-@ century bellows were also being operated by water engines , steam engines or gasoline engines . Starting in the 1860s bellows were gradually replaced by wind turbines which were later directly connected to electrical motors . This made it possible for organists to practice regularly on the organ . Most organs , both new and historic , have electric blowers , although others can still be operated manually . The wind supplied is stored in one or more regulators to maintain a constant pressure in the windchests until the action allows it to flow into the pipes .

= = = Stops = = =

Each stop usually controls one rank of pipes , although mixtures and undulating stops (such as the Voix céleste) control multiple ranks . The name of the stop reflects not only the stop 's timbre and construction , but also the style of the organ in which it resides . For example , the names on an organ built in the north German Baroque style generally will be derived from the German language , while the names of similar stops on an organ in the French Romantic style will usually be French . Most countries tend to use only their own languages for stop nomenclature . English @-@ speaking nations as well as Japan are more receptive to foreign nomenclature . Stop names are not standardized : two otherwise identical stops from different organs may have different names .

To facilitate a large range of timbres , organ stops exist at different pitch levels . A stop that sounds at unison pitch when a key is depressed is referred to as being at 8 ? (pronounced " eight @-@ foot ") pitch . This refers to the length of the lowest @-@ sounding pipe in that rank , which is approximately eight feet . For the same reason , a stop that sounds an octave higher is at 4 ? pitch , and one that sounds two octaves higher is at 2 ? pitch . Likewise , a stop that sounds an octave lower than unison pitch is at 16 ? pitch , and one that sounds two octaves lower is at 32 ? pitch . Stops of different pitch levels are designed to be played simultaneously .

The label on a stop knob or rocker tab indicates the stop ? s name and its pitch in feet . Stops that control multiple ranks display a Roman numeral indicating the number of ranks present , instead of its pitch . Thus , a stop labelled " Open Diapason 8 ? " is a single @-@ rank diapason stop sounding at 8 ? pitch . A stop labelled " Mixture V " is a five @-@ rank mixture .

Sometimes , a single rank of pipes may be able to be controlled by several stops , allowing the rank to be played at multiple pitches or on multiple manuals . Such a rank is said to be unified or borrowed . For example , an 8 ? Diapason rank may also be made available as a 4 ? Octave . When both of these stops are selected and a key (for example , c ?) is pressed , two pipes of the same rank will sound : the pipe normally corresponding to the key played (c ?) , and the pipe one octave above that (c ? ?) . Because the 8 ? rank does not have enough pipes to sound the top octave of the keyboard at 4 ? pitch , it is common for an extra octave of pipes used only for the borrowed 4 ? stop to be added . In this case , the full rank of pipes (now an extended rank) is one octave longer than the keyboard .

Special unpitched stops also appear in some organs . Among these are the Zimbelstern (a wheel of rotating bells) , the nightingale (a pipe submerged in a small pool of water , creating the sound of a bird warbling when wind is admitted) , and the effet d 'orage (" thunder effect " , a device that sounds the lowest bass pipes simultaneously) . Standard orchestral percussion instruments such as the drum , chimes , celesta , and harp have also been imitated in organ building .

= = = Console = = =

The controls available to the organist , including the keyboards , couplers , expression pedals , stops , and registration aids are accessed from the console . The console is either built into the organ case or detached from it .

= = = = Keyboards = = = =

Keyboards played by the hands are known as manuals (from the Latin manus , meaning " hand ") . The keyboard played by the feet is a pedalboard . Every organ has at least one manual (most have two or more) , and most have a pedalboard . Each keyboard is named for a particular division of the organ (a group of ranks) and generally controls only the stops from that division . The range of the keyboards has varied widely across time and between countries . Most current specifications call for two or more manuals with sixty @-@ one notes (five octaves , from C to c ? ?) and a pedalboard with thirty or thirty @-@ two notes (two and a half octaves , from C to f ? or g ?) .

= = = = Couplers = = = =

A coupler allows the stops of one division to be played from the keyboard of another division . For example , a coupler labelled " Swell to Great " allows the stops drawn in the Swell division to be played on the Great manual . This coupler is a unison coupler , because it causes the pipes of the Swell division to sound at the same pitch as the keys played on the Great manual . Coupling allows stops from different divisions to be combined to create various tonal effects . It also allows every stop of the organ to be played simultaneously from one manual .

Octave couplers , which add the pipes an octave above (super @-@ octave) or below (sub @-@ octave) each note that is played , may operate on one division only (for example , the Swell super octave , which adds the octave above what is being played on the Swell to itself) , or act as a coupler to another keyboard (for example , the Swell super @-@ octave to Great , which adds to the Great manual the ranks of the Swell division an octave above what is being played) .

In addition , larger organs may use unison off couplers , which prevent the stops pulled in a particular division from sounding at their normal pitch . These can be used in combination with octave couplers to create innovative aural effects , and can also be used to rearrange the order of the manuals to make specific pieces easier to play .

= = = = Enclosure and expression pedals = = = =

Enclosure refers to a system that allows for the control of volume without requiring the addition or subtraction of stops . In a two @-@ manual organ with Great and Swell divisions , the Swell will be enclosed . In larger organs , parts or all of the Choir and Solo divisions may also be enclosed . The pipes of an enclosed division are placed in a chamber generally called the swell box . At least one side of the box is constructed from horizontal or vertical palettes known as swell shades , which operate in a similar way to Venetian blinds ; their position can be adjusted from the console . When the swell shades are open , more sound is heard than when they are closed . Sometimes the shades are exposed , but they are often concealed behind a row of facade @-@ pipes or a grill .

The most common method of controlling the louvers is the balanced swell pedal . This device is usually placed above the centre of the pedalboard and is configured to rotate away from the organist from a near @-@ vertical position (in which the shades are closed) to a near @-@ horizontal position (in which the shades are open) . An organ may also have a similar @-@ looking crescendo pedal , found alongside any expression pedals . Pressing the crescendo pedal forward cumulatively activates the stops of the organ , starting with the softest and ending with the loudest ; pressing it backwards reverses this process .

= = = = Combination action = = = =

Organ stops can be combined in countless permutations , resulting in a great variety of sounds . A combination action can be used to switch instantly from one combination of stops (called a registration) to another . Combination actions feature small buttons called pistons that can be pressed by the organist , generally located beneath the keys of each manual (thumb pistons) or above the pedalboard (toe pistons) . The pistons may be divisional (affecting only a single division) or general (affecting all the divisions) , and are either preset by the organ builder or can be altered by the organist . Modern combination actions operate via computer memory , and can store several channels of registrations .

= = = Casing = = =

The pipes , action , and wind system are almost always contained in a case , the design of which also may incorporate the console . The case blends the organ 's sound and aids in projecting it into the room . The case often is designed to complement the building 's architectural style and it may contain ornamental carvings and other decorations . The visible portion of the case , called the façade , will most often contain pipes , which may be either sounding pipes or dummy pipes solely for decoration . The façade pipes may be plain , burnished , gilded , or painted and are usually referred to as (en) montre within the context of the French organ school .

Organ cases occasionally feature a few ranks of pipes protruding horizontally from the case in the manner of a row of trumpets . These are referred to as pipes en chamade and are particularly common in organs of the Iberian peninsula and large 20th @-@ century instruments .

Many organs , particularly those built in the early 20th century , are contained in one or more rooms called organ chambers . Because sound does not project from a chamber into the room as clearly as from a freestanding organ case , enchambered organs may sound muffled and distant . For this reason , some modern builders , particularly those building instruments specializing in polyphony rather than Romantic compositions , avoid this unless the architecture of the room makes it necessary .

= = = Tuning and regulation = = =

The goal of tuning a pipe organ is to adjust the pitch of each pipe so that they all sound in tune with each other . How the pitch of each pipe is adjusted depends on the type and construction of that pipe .

Regulation adjusts the action so that all pipes sound correctly . If the regulation is wrongly set , the keys may be at different heights , some pipes may sound when the keys are not pressed , or pipes may not sound when a key is pressed . Tracker action , for example in the organ of Cradley Heath Baptist Church , includes adjustment nuts on the wire ends of the wooden trackers , which have the effect of changing the effective length of each tracker .

= = History and development = =

= = = Antiquity and Medieval = = =

The organ is one of the oldest instruments still used in European classical music that has commonly been credited as having derived from Greece . Its earliest predecessors were built in Ancient Greece in the 3rd century BC . The word organ is derived from the Latin organum , an instrument similar to a portative organ used in ancient Roman circus games . Organum is derived in turn from the Greek ??????? (organon) , a generic term for an instrument or a tool .

The Greek engineer Ctesibius of Alexandria is credited with inventing the organ in the 3rd century BC . He devised an instrument called the hydraulis , which delivered a wind supply maintained

through water pressure to a set of pipes . The hydraulis was played in the arenas of the Roman Empire . The pumps and water regulators of the hydraulis were replaced by an inflated leather bag in the 2nd century AD , and true bellows began to appear in the 6th or 7th century AD .

The 9th century Persian geographer Ibn Khurradadhbih (d . 911) ; in his lexicographical discussion of instruments cited the urghun (organ) as one of the typical instruments of the Byzantine Empire . It was often used in the Hippodrome . The first Western pipe organ with " great leaden pipes " was sent to the West by the Byzantine emperor Constantine V as a gift to Pepin the Short King of the Franks in 757 . Pepin 's son Charlemagne requested a similar organ for his chapel in Aachen in 812 , beginning its establishment in Western church music .

Portable organs (the portative and the positive organ) were invented in the Middle Ages . Towards the middle of the 13th century , the portatives represented in the miniatures of illuminated manuscripts appear to have real keyboards with balanced keys , as in the Cantigas de Santa Maria . Its portability made the portative useful for the accompaniment of both sacred and secular music in a variety of settings .

Large organs such as the one installed in 1361 in Halberstadt , Germany , the first documented permanent organ installation , likely prompted Guillaume de Machaut to describe the organ as " the king of instruments " , a characterization still frequently applied . The Halberstadt organ was the first instrument to use a chromatic key layout across its three manuals and pedalboard , although the keys were wider than on modern instruments . It had twenty bellows operated by ten men , and the wind pressure was so high that the player had to use the full strength of his arm to hold down a key .

Until the mid @-@ 15th century , organs had no stop controls . Each manual controlled ranks at multiple pitches , known as the Blockwerk . Around 1450 , controls were designed that allowed the ranks of the Blockwerk to be played individually . These devices were the forerunners of modern stop actions . The higher @-@ pitched ranks of the Blockwerk remained grouped together under a single stop control ; these stops developed into mixtures .

= = = Renaissance and Baroque periods = = =

During the Renaissance and Baroque periods , the organ 's tonal colors became more varied . Organ builders fashioned stops that imitated various instruments , such as the krummhorn and the viola da gamba . The Baroque period is often thought of as organ building 's " golden age , " as virtually every important refinement was brought to a culminating art . Builders such as Arp Schnitger , Jasper Johannsen , Zacharias Hildebrandt and Gottfried Silbermann constructed instruments that were in themselves artistic masterpieces , displaying both exquisite craftsmanship and beautiful sound . These organs featured well @-@ balanced mechanical key actions , giving the organist precise control over the pipe speech . Schnitger 's organs featured particularly distinctive reed timbres and large Pedal and Rückpositiv divisions .

Different national styles of organ building began to develop , often due to changing political climates . In the Netherlands , the organ became a large instrument with several divisions , doubled ranks , and mounted cornets . The organs of northern Germany also had more divisions , and independent pedal divisions became increasingly common . The divisions of the organ became visibly discernible from the case design . 20th @-@ century musicologists labelled this the Werkprinzip .

In France , as in Italy , Spain and Portugal , organs were primarily designed to play alternatim verses rather than accompany congregational singing . The French Classical Organ , became remarkably consistent throughout France over the course of the Baroque era , more so than any other style of organ building in history , and standardized registrations developed . It was elaborately described by Dom Bédos de Celles in his treatise L 'art du facteur d 'orgues (The Art of Organ Building) . For example , in France , the organ at Notre @-@ Dame 's (St. Etienne , Loire) was built by Joseph and Claude @-@ Ignace Callinet in 1837 , at a time when their career was at its apex .

In England , many pipe organs were taken out of churches during the English Reformation of the 16th century and the Commonwealth period . Often these were relocated to private homes . At the

Restoration , organ builders such as Renatus Harris and " Father " Bernard Smith brought new organ @-@ building ideas from continental Europe . English organs evolved from small one- or two @-@ manual instruments into three or more divisions disposed in the French manner with grander reeds and mixtures . The Echo division began to be enclosed in the early 18th century , and in 1712 Abraham Jordan claimed his " swelling organ " at St Magnus @-@ the @-@ Martyr to be a new invention . The swell box and the independent pedal division appeared in English organs beginning in the 18th century .

= = = Romantic period = = =

During the Romantic period , the organ became more symphonic , capable of creating a gradual crescendo . New technologies and the work of organ builders such as Eberhard Friedrich Walcker , Aristide Cavaillé @-@ Coll , and Henry Willis made it possible to build larger organs with more stops , more variation in sound and timbre , and more divisions . Enclosed divisions became common , and registration aids were developed to make it easier for the organist to manage the great number of stops . The desire for louder , grander organs required that the stops be voiced on a higher wind pressure than before . As a result , a greater force was required to overcome the wind pressure and depress the keys . To solve this problem , Cavaillé @-@ Coll configured the English " Barker lever " to assist in operating the key action .

Organ builders began to lean towards specifications with fewer mixtures and high @-@ pitched stops . They preferred to use more 8 ? and 16 ? stops in their specifications and wider pipe scales . These practices created a warmer , richer sound than was common in the 18th century . Organs began to be built in concert halls (such as the organ at the Palais du Trocadéro in Paris) , and composers such as Camille Saint @-@ Saëns and Gustav Mahler used the organ in their orchestral works .

= = = Modern development = = =

The development of pneumatic and electro @-@ pneumatic key actions in the late 19th century made it possible to locate the console independently of the pipes , greatly expanding the possibilities in organ design . Electric stop actions were also developed , which allowed sophisticated combination actions to be created .

In the mid @-@ 20th century , organ builders began to build historically inspired instruments modelled on Baroque organs . They returned to building mechanical key actions , voicing with lower wind pressures and thinner pipe scales , and designing specifications with more mixture stops . This became known as the Organ reform movement .

In the late 20th century , organ builders began to incorporate digital components into their key , stop , and combination actions . Besides making these mechanisms simpler and more reliable , this also makes it possible to record and play back an organist ? s performance via the MIDI protocol . In addition , some organ builders have incorporated digital stops into their pipe organs .

The electronic organ developed throughout the 20th century . Some pipe organs were replaced by digital organs because of their lower purchase price , smaller physical size , and minimal maintenance requirements . In the early 1970s , Rodgers Instruments pioneered the hybrid organ , an electronic instrument that incorporates real pipes ; other builders such as Allen Organs and Johannus Orgelbouw have since built hybrid organs . It should be noted that electronic " organs " may have a lower purchase price but have demonstrated a higher cost of ownership as components fail and parts become obsolete . Pipe organs , made of metal , wood , leather , and felt can be maintained for centuries .

= = Repertoire = =

The main development of organ repertoire has progressed along with that of the organ itself , leading to distinctive national styles of composition . Because organs are commonly found in

churches and synagogues , the organ repertoire includes a large amount of sacred music , which is accompanimental (choral anthems , congregational hymns , liturgical elements , etc .) as well as solo in nature (chorale preludes , hymn versets designed for alternatim use , etc .) . The organ 's secular repertoire includes preludes , fugues , sonatas , organ symphonies , suites , and transcriptions of orchestral works .

Although most countries whose music falls into the Western tradition have contributed to the organ repertoire , France and Germany in particular have produced exceptionally large amounts of organ music . There is also an extensive repertoire from the Netherlands , England , and the United States .

Before the Baroque era , keyboard music generally was not written for one instrument or another , but rather was written to be played on any keyboard instrument . For this reason , much of the organ 's repertoire through the Renaissance period is the same as that of the harpsichord . Pre @-@ Renaissance keyboard music is found in compiled manuscripts that may include compositions from a variety of regions . The oldest of these sources is the Robertsbridge Codex , dating from about 1360 . The Buxheimer Orgelbuch , which dates from about 1470 and was compiled in Germany , includes intabulations of vocal music by the English composer John Dunstaple . The earliest Italian organ music is found in the Faenza Codex , dating from 1420 .

In the Renaissance period , Dutch composers such as Jan Pieterszoon Sweelinck composed both fantasias and psalm settings . Sweelinck in particular developed a rich collection of keyboard figuration that influenced subsequent composers . The Italian composer Claudio Merulo wrote in the typical Italian genres of the toccata , the canzona , and the ricercar . In Spain , the works of Antonio de Cabezón began the most prolific period of Spanish organ composition , which culminated with Juan Cabanilles .

Early Baroque organ music in Germany was highly contrapuntal . Sacred organ music was based on chorales : composers such as Samuel Scheidt and Heinrich Scheidemann wrote chorale preludes , chorale fantasias , and chorale motets . Towards the end of the Baroque era , the chorale prelude and the partita became mixed , forming the chorale partita . This genre was developed by Georg Böhm , Johann Pachelbel , and Dieterich Buxtehude . The primary type of free @-@ form piece in this period was the praeludium , as exemplified in the works of Matthias Weckmann , Nicolaus Bruhns , Böhm , and Buxtehude . The organ music of Johann Sebastian Bach fused characteristics of every national tradition and historical style in his large @-@ scale preludes and fugues and chorale @-@ based works . Towards the end of the Baroque era , George Frideric Handel composed the first organ concertos .

In France , organ music developed during the Baroque era through the music of Jean Titelouze , François Couperin , and Nicolas de Grigny . Because the French organ of the 17th and early 18th centuries was very standardized , a conventional set of registrations developed for its repertoire . The music of French composers (and Italian composers such as Girolamo Frescobaldi) was written for use during the Mass . Very little secular organ music was composed in France and Italy during the Baroque period ; the written repertoire is almost exclusively intended for liturgical use . In England , composers such as John Blow and John Stanley wrote multi @-@ sectional free works for liturgical use called voluntaries through the 19th century .

Organ music was seldom written in the Classical era , as composers preferred the piano with its ability to create dynamics . In Germany , the six sonatas op . 65 of Felix Mendelssohn (published 1845) marked the beginning of a renewed interest in composing for the organ . Inspired by the newly built Cavaillé @-@ Coll organs , the French organist @-@ composers César Franck , Alexandre Guilmant and Charles @-@ Marie Widor led organ music into the symphonic realm . The development of symphonic organ music continued with Louis Vierne and Charles Tournemire . Widor and Vierne wrote large @-@ scale , multi @-@ movement works called organ symphonies that exploited the full possibilities of the symphonic organ . Max Reger and Sigfrid Karg @-@ Elert 's symphonic works made use of the abilities of the large Romantic organs being built in Germany at the time .

In the 19th and 20th centuries , organ builders began to build instruments in concert halls and other large secular venues , allowing the organ to be used as part of an orchestra , as in Saint @-@

Saëns ' Symphony No. 3 . Frequently the organ is given a soloistic part , such as in Joseph Jongen 's Symphonie Concertante for Organ & Orchestra , Francis Poulenc 's Concerto for Organ , Strings and Tympani , and Frigyes Hidas ' Organ Concerto .

Other composers who have used the organ prominently in orchestral music include Gustav Holst , Richard Strauss , Ottorino Respighi , Gustav Mahler , Anton Bruckner , and Ralph Vaughan Williams . Because these concert hall instruments could approximate the sounds of symphony orchestras , transcriptions of orchestral works found a place in the organ repertoire . As silent films became popular , theatre organs were installed in theatres to provide accompaniment for the films .

In the 20th @-@ century symphonic repertoire , both sacred and secular , continued to progress through the music of Marcel Dupré , Maurice Duruflé , and Herbert Howells . Other composers , such as Olivier Messiaen , György Ligeti , Jehan Alain , Jean Langlais , Gerd Zacher , and Petr Eben , wrote post @-@ tonal organ music . Messiaen 's music in particular redefined many of the traditional notions of organ registration and technique .

= = = Online radio stations = = =

Organlive An online station of classical organ music .
Positively Baroque An online station dedicated to organ music of the Baroque period .
At the Organ An online station providing weekly programming about the classical organ .
Pipedreams A weekly 2 @-@ hour public radio program of organ music .
Sacred Classics , a radio program of organ and choral music

= = = Databases = = =

International Organ Foundation , an online pipe organ database with specifications of more than 8000 organs in over 80 countries
Organ Historical Society Pipe Organ Database
The Top 20 - The World 's Largest Pipe Organs
National Pipe Organ Register , featuring history and specifications of 28 @,@ 000 pipe organs in the United Kingdom
Die Orgelseite , photos and specifications of some of the world 's most interesting organs (subscription required for some content)
Organ Database , stoplists , pictures and information about some 33 @,@ 500 pipe organs around the world
The New York City Organ Project documents organs present and past in the five boroughs of New York City

= = = Resources for pipe organ video recordings = = =

" TourBus to the King of Instruments " ? video series with Carol Williams (organist) about the large & small , famous & unique pipe organs of the world . American Video & Audio Production Company
" The Joy of Music " ? television series with Diane Bish about large pipe organs in USA and in Europe .