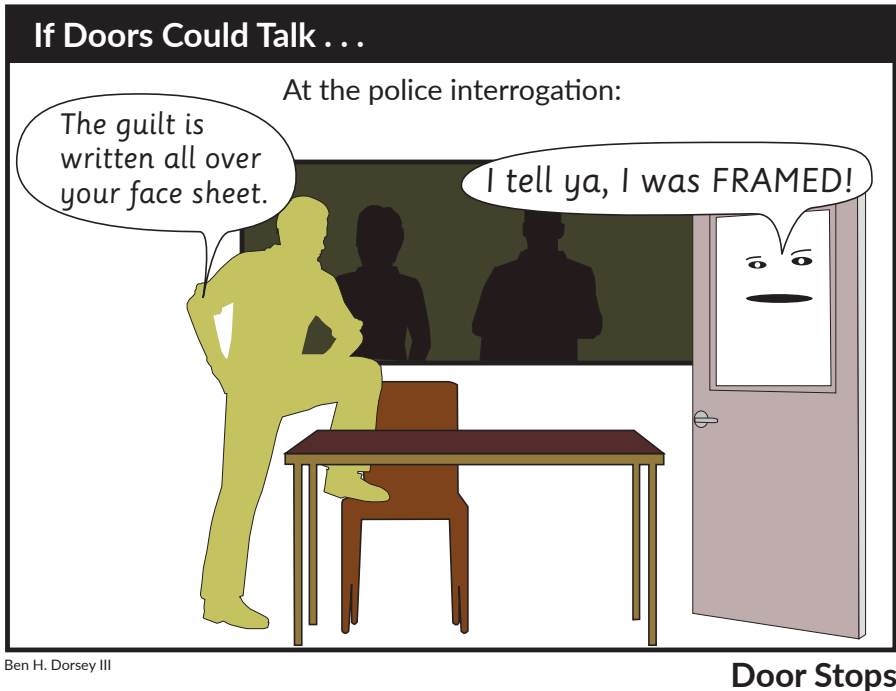


# Momentous Events in Door History

## *Humorous and Totally True Insights of Doors through Time*



E-book by



**Special-Lite®**

ENGINEERED ARCHITECTURAL SOLUTIONS

Created for



Door Security +  
Safety Professionals

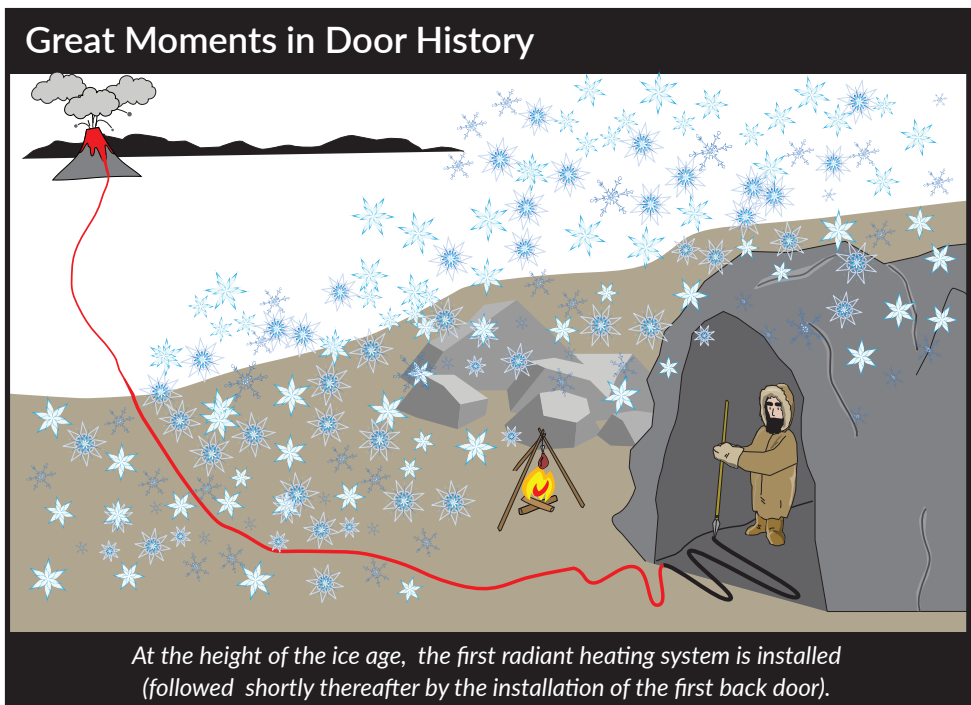
# Introduction

In the vast arena of history there are numerous avenues to pursue. There are personal histories and the histories of nations. There are histories of political systems and histories of wars. There is the history of art and the history of geological change.

In all of this, the history of doors may seem trivial. It is not, however, uninteresting.

For instance, how large was the door on Noah's Ark? Okay, we really don't know. But if we did how would we possibly translate the variable measure of a cubit?

And, the first door? We don't know the answer to that either. But perhaps it was a back door:



Ben H. Dorsey III

**Door Stops**

What we do know comes from historical records and archaeological findings. And those are the ones we will discuss in this e-book. Along the way we'll introduce some door humor to keep things entertaining.

# Door History

## The Earliest Doors

We have no records that indicate the origin of doors. We envision such things as animal skins being placed over whatever formed an entrance to a structure. We have some recorded history of early doors. Beyond this recorded history we find that the earliest doors we know of were found in archaeological diggings. However, not all of these were deliberate archaeological expeditions.

In 2010, for example, an excavation was underway for a new underground parking structure adjacent to the opera house in Zürich, Switzerland. When some unusual things were unearthed, archaeologists were called in. They later discovered a nicely preserved wooden door that was later estimated to be over 5000 years old.



*This plank-style wood door made of poplar, demonstrates a remarkable design and is dated to 3063 BC. Photo courtesy of Stadt Zürich Hochbaudepartement.*

We also know that doors were employed on a routine basis in Egypt during the same time period. We know that standard doors were employed in Egypt because they also introduced the concept of false doors. (See related article on page 15.)

Meanwhile, a fragment of an actual door in Egypt has been dated to approximately 2000 BC. Interestingly the Egyptians also used precious wood for their actual doors.



*This large door fragment (84 5/8 × 59 7/16 × 4 5/16 in. ; H. 215 × W. 151 × D. 11 cm) and made of sycamore and gesso, was unearthed in a 1922-23 excavation near Thebes.*

By this time (2000 BC) stone doors were being utilized throughout Asia and Europe. These doors were primarily used for temples and other religious purposes such as burial mounds.

To many cultures, including the ancient Greeks, such doors were more than merely entrances. They were considered sacred. In fact, different parts of the entrance had their own deities assigned to them. The god of the door was Janus, of the lintel-Limentinus. Hinges were regarded by Cardea, and the other parts, such as the jamb and threshold, were left to Forculus.<sup>1</sup>

Materials for the building of doors were carefully selected and of the highest quality, often wood and marble to match the material of the temple itself. More costly materials such as gold and ivory were sometimes added to make the doors more costly and brilliant.<sup>1</sup>

Stone doors were also used in the ancient Sumerian city Nippur, located in what is now Iraq. For many centuries this community was nothing more than a village of reed huts. However, the city came into its own with the construction of the temple circa 1950 BC. Inscriptions on door sockets make it clear that the people held this shrine in high veneration.

Door sockets were used because stone doors throughout Rome, Greece, Mesopotamia, India, and elsewhere were pivoting types.

Stone doors were also rolled into place at the entrance of tombs throughout the Middle East as early as 2000 BC. We also know from accounts in the New Testament that this practice still existed in the meridian of time.



Still, ancient builders were never far from using wood for their doors. In 587 BC in Jerusalem Solomon built the most elaborate Jewish temple to date. Here, he chose olive wood overlaid with gold for the temple doors. Throughout Greece during the centuries various temples were also designed with elaborate wood doors.

There were exceptions however. For example, the Temple of Zeus at Olympia was described as having bronze doors. Experts conclude that these were likely wooden doors overlaid with bronze.<sup>2</sup>

## Ancient Door Innovations

We have much evidence from the 1st century A.D. that innovations were taking place in terms of doors from Rome to Greece and likely well beyond.

For instance, architectural ruins preserved at Roman sites including Herculaneum and Pompeii illustrate that both folding doors and sliding doors were in use. Both of these sites were preserved in the volcanic ash from the Mount Vesuvius eruption of 79 A.D.



*Folding doors from the House of the Mysteries in Pompeii*



*A sliding door track from the ruins of Pompeii*

Meanwhile in Greece, architecture and science were evolving rapidly. In fact, a certain Greek mathematician by the name of Heron (born in 10 A.D.) is credited with the invention of the first automatic door in Alexandria.

In his books, such as Pneumatica and Mechanica, he describes numerous inventions including an hydraulic system which uses fire to create steam that builds up atmospheric pressure in a brass vessel. This pumped water into adjacent holding containers that acted as weights, enabling a series of ropes and pulleys to open the temple doors. The system was found in use in Alexandria<sup>3</sup>

As we fast-forward a few centuries we see that religious influences continue and that doors begin to take on an artistic flair. A magnificent example of this trend is found on the Basilica di Santa Sabina all'Aventino. This historic church on the Aventine Hill in Rome, Italy is a basilica and mother church of the Roman Catholic Order of Preachers, better known as the Dominicans. Santa Sabina is the oldest extant Roman basilica in Rome that preserves its original colonnaded rectangular plan and architectural style. It was built between 422 and 432 A.D.

The Basilica is best known for its cypress wood doors and the biblical scenes carved into its surface. The entire entrance consists of the modern equivalents of doors, a transom, and non-vision sidelites. The portal has 28 carved panels, 18 of which still exist. These doors are also noteworthy in other respects:

- This is the oldest known carved wood door in existence.
- It contains the earliest existing public image of the crucifixion of Christ.



*The cypress wood carved doors at the Basilica di Santa Sabina*



Through significant research British biochemist and historian, Joseph Needham, claims other significant door innovations for China beginning in the 4th century. In his seven volumes of Science and Civilisation in China, he documents the use of automated doors associated with water clocks, hinges, metal-clad doors, door bars, and numerous creative uses of doors for military defense purposes. Interestingly, like the ancient Greeks, the ancient Chinese also recognized door gods.

Some Internet sources also note that Needham claims the invention of a foot-actuated automatic door opener in the 7 century A.D. (usually cited as 17th century A.D.) and that Emperor Yang of Sui, who reigned from 604–618, had the device installed for the royal library. However, no independent confirmation of this claim can be cited or that Needham actually made it.

## The Copper and Bronze Age

As we move into the latter centuries of the first millennium A.D. Medieval doors in Europe began to make use of copper and its alloys usually over a wooden base.

One notable example of this are the Bernward Doors of Hildesheim Cathedral in Germany.

They consist of two leaves of a



*The Bernward Doors of Hildesheim Cathedral in Germany*

pair of Ottonian or Romanesque bronze doors, made c. 1015. They were commissioned by Bishop Bernward of Hildesheim (938–1022). The doors show relief images from the Bible, scenes from the Book of Genesis on the left door and from the life of Christ on the right door.

They are considered a masterpiece of Ottonian art, and feature the oldest known monumental image cycle in German sculpture, and also the oldest cycle of images cast in metal in Germany.<sup>4</sup>





The doors of the Church of the Nativity at Bethlehem (6th century) are covered with plates of bronze, cut out in patterns. Those of Hagia Sophia at Constantinople, of the 8th and 9th century, are wrought in bronze. Bronze doors on the Aachen Cathedral in Germany date back to about 800 A.D.

*The bronze doors of the Aachen Cathedral were cast around 800 AD for the original Palatine Chapel. They were based on ancient models and weigh four tons.*

While bronze became the primary cladding material during the centuries, pure copper was used extensively for trim and hardware. This is true both during these latter centuries as well as earlier centuries.

This trend of using copper and bronze continued into the Renaissance period as well. A notable example of this is The Porta del Paradiso (Gates of Paradise) or the main gate of the Baptistry of Florence (Battistero di San Giovanni), located in front of the Cathedral of Santa Maria del Fiore.

The Gates of Paradise was created by Florentine goldsmith and sculptor Lorenzo Ghiberti between 1425 and 1452 and installed in the eastern portal of the Baptistery. The Gates have been praised by generations of artists and art historians for their compelling portrayal of scenes from the Old Testament. Over time, the seventeen-foot-tall, three-ton bronze doors became an icon of Renaissance, one of the most famous works of art in the world.



*The first two bronze doors of the Florence Baptistry were made by Andrea Pisano in the 14th century. This third set, or Gates of Paradise, was added in the early 15th century.*

## Back to Wood

In the second millennium A.D. bronze doors continued to be used routinely. However, ornate panel and carved wood doors also graced the best structures.

Of course, many of these wood doors were also utilitarian in nature. One such door has been noted as the oldest door in Great Britain. It is a door of Westminster Abbey.

This oak door opens from the Abbey Cloisters into the octagonal Chapter House outer vestibule, where monks met every day for prayers back in the thirteenth century and Parliament temporarily resided in the fourteenth century, before they transferred to the Palace of Westminster.

The boards were cut from a single tree and the visible rings on them represent growth during the years from AD 924 to 1030. Because the bark and some of the sapwood was trimmed away when the planks were made into a door, the exact year of felling cannot be determined, but it can be calculated as falling within the period 1032-1064. A date in the 1050s for the manufacture of the door is most likely.

The door now measures 6½ ft high by 4 ft wide, but has been cut down. Almost certainly the top was originally round-arched, and the door would have measured 9 ft high by 4½ ft wide. (Obviously, the notion of repurposing building materials is not only associated with the modern green building movement!)

*This oak door of Westminster Abbey is Britain's oldest door and still retains one of its original iron straps.*



Even when the doors are rather plainly carved, they can be graced by a more ornate entrance system. A fine example is found on the Aix Cathedral in southern France.

The doors of the cathedral were commissioned in 1505, and were carved of walnut. Meanwhile, the carved stone portal features four figures in high relief of the major prophets of the Old Testament (Isaiah, Ezekiel, Daniel and Jeremiah).

Above the prophets are the figures of twelve Sybils, pagan fortune-tellers from antiquity, honored by medieval Christian scholars for having forecast the birth, death and resurrection of Christ. The figures are framed with garlands of pomegranates and acorns, bunches of grapes, symbols of the Eucharist, a lion,

a dragon and other fantastic animals: an aspic (another type of dragon) and a basilisk, a cock with the tail of a snake, representing the battle between good and evil.<sup>5</sup>



*These walnut doors of the Aix Cathedral in southern France date to 1505 A.D.*

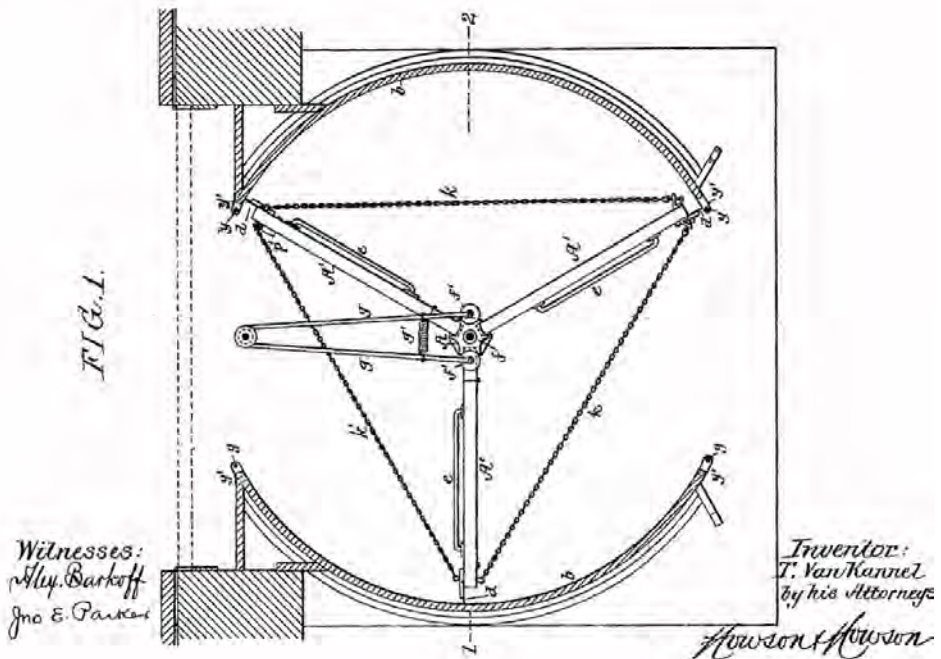


# Recent Innovations

## Revolving Doors

By the late 19th century numerous door innovations were taking place. In the 1880s, for example, we see the emergence of revolving doors. Such doors were needed to overcome the stack effect pressure in buildings.

The first patent for such a mechanism (“door without draft of air”) was issued in Germany in December 1881. However, a more detailed patent was issued to Theophilus Van Kannel, of Philadelphia, in the United States in August 1888. The patent drawings filed show a three-partition revolving door. The patent describes it as having “three radiating and equidistant wings . . . provided with weather-strips or equivalent means to insure a snug fit”. The door “possesses numerous advantages over a hinged-door structure . . . it is perfectly noiseless . . . effectually prevents the entrance of wind, snow, rain or dust . . .” “Moreover, the door cannot be blown open by the wind . . . there is no possibility of collision, and yet persons can pass both in and out at the same time.”



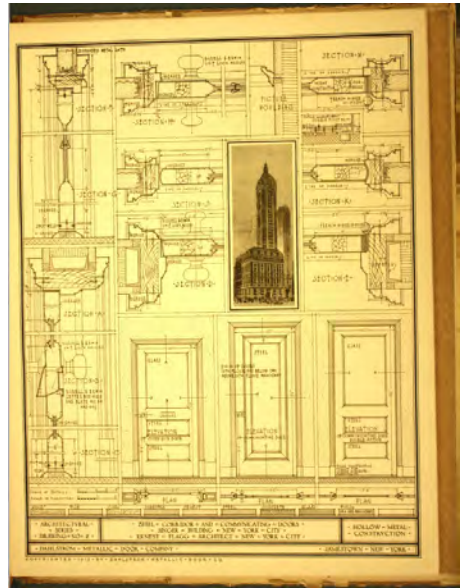
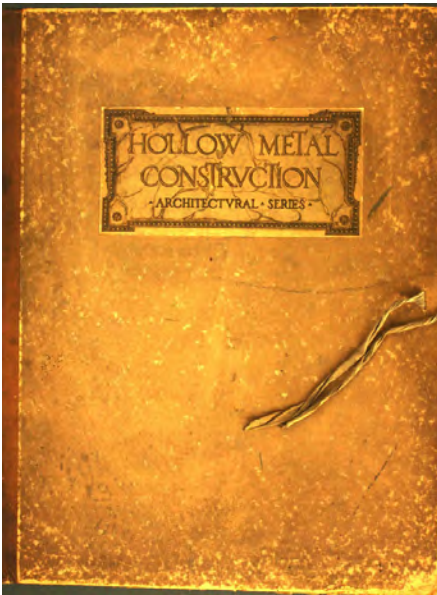
Patent drawing by Theophilus Van Kannel for a “Storm-Door Structure”, 1888

In 1899, the world's first wooden revolving door was installed at Rector's, a restaurant on Times Square in Manhattan, located on Broadway between West 43rd and 44th Streets.<sup>6</sup> In 2007 Theophilus Van Kannel was inducted into the National Inventors Hall of Fame for this invention.

## The Advent of Hollow Metal (Steel) Doors

At the dawn of the 20th century the processes for steel-making were being refined and the metal was being used for numerous industrial purposes. It was only a matter of time before someone would apply them to doors.

One such innovator was Charles Dahlstrom who, in 1904, founded the Dahlstrom Metal Door Company.<sup>7</sup> The key selling point for this emerging use of steel was fire-resistance versus standard wood doors.



*Cover and sample interior page of the 1913 catalog of the Dahlstrom Metal Door Company*

In the 1950s, numerous steel door and steel door frame manufacturers emerged, many of whom are still in business today. 1954 also saw the founding of the Steel Door Institute.

## Great Moments in Door History



*Ever the experimenter, Cron invents the first air door.  
Shortly thereafter, his widow invents the first front door.*

Ben H. Dorsey III

## Door Stops

### The Advent of Aluminum Stile and Rail Doors

Aluminum is a rather new metal. Theories for it emerged in the early 19th century. But it wasn't until 1825 that practical aluminum was made for the first time. Refining processes took place throughout the remainder of the 19th century and the early part of the 20th century.

For architectural products, aluminum found its first use during the 1920s with leaders such as Kawneer. By the late 1930s aluminum stile and rail doors and related aluminum storefronts had been introduced and began taking hold.

Following World War II and into the 1970s, the use of aluminum turned away from the war effort to once more architectural products. In 1971, for example, Special-Lite Inc. entered the building products arena with aluminum flush and aluminum stile and rail doors as well as aluminum tube framing.

In particular, aluminum stile and rail doors have become the most ubiquitous entrance systems, extending beyond retail buildings and into several other vertical markets. Narrow, medium, and wide stile models as well as numerous finish options and abundant glass contribute to their popularity.

# The Advent of Fiberglass Doors

Fiberglass begins as glass fibers which have been produced for centuries. In the mid-19th century the first patent for producing glass fibers was given in Prussia.

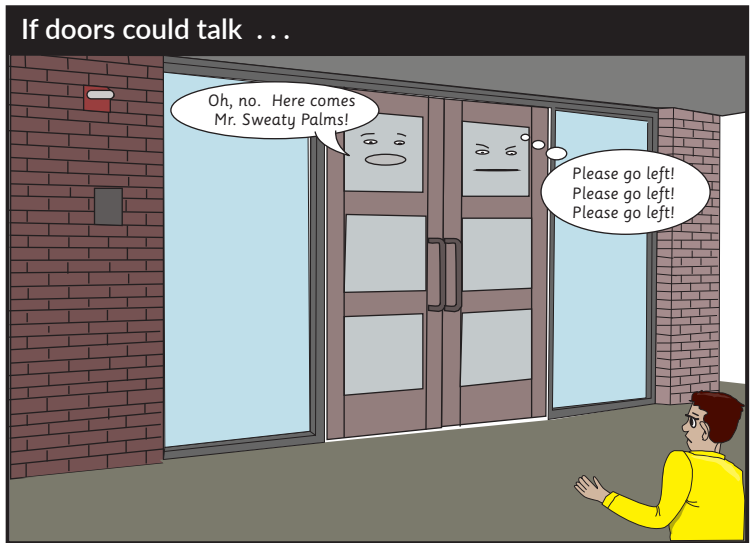
Mass production of glass strands was accidentally discovered in 1932 when Games Slayter, a researcher at Owens-Illinois, directed a jet of compressed air at a stream of molten glass and produced fibers. A patent for this method of producing glass wool was first applied for in 1933. Owens joined with the Corning company in 1935 and the method was adapted by Owens Corning to produce its patented “Fiberglas” (spelled with one “s”) in 1936.

Beyond the actual glass strands or fiberglass a resin would be needed to combine it with a plastic to produce a true composite material. A suitable resin for accomplishing this was developed in 1936 by du Pont. Thus, formable fiberglass was born.

It was not until the mid-1980s that fiberglass products began to be used for architectural work beginning with doors and windows.

However, in 1981 Special-Lite Inc. introduced the world’s first hybrid door with an aluminum chassis and FRP (fiber reinforced polymer) face sheets. This product introduction brought about a new level of resilience for doors. Special-Lite also offers fully pultruded fiberglass doors.

Fiberglass doors, or hybrid doors incorporating fiberglass, find market applications where high use, abuse, and resistance to corrosion and water penetration are key.



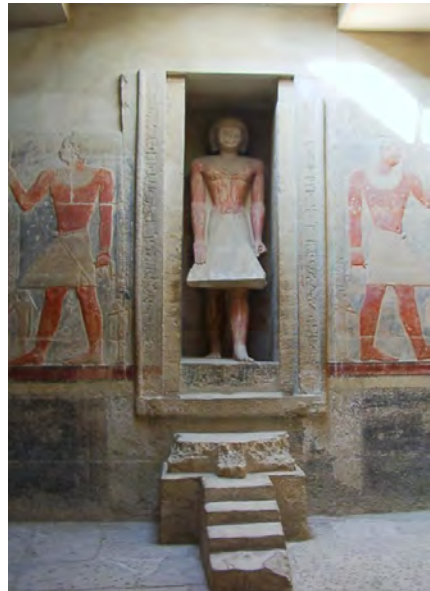
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Door Stops

# False Doors

Early in recorded history a notion of false doors appears. As early as 3100 BC the Egyptians were routinely incorporating false doors into their tomb architecture. We know that they were in common use during the Third Dynasty of the Old Kingdom, 2600 BC.

As the name would suggest, a false door is an imitation door usually found in mortuary temples and tombs across ancient Egypt. Facing west, these doors served as an imaginary passage between the world of the living and the world of the dead, and were believed to allow the Ka (an element of the soul) to pass through them. The deity or the deceased could interact with the world of the living either by passing through the door or by receiving offerings through it. The false door is one of the most common elements found within Egyptian tomb complexes, and is also one of the most important architectural features found in royal and non-royal tombs, beginning with Egypt's Old Kingdom.<sup>8</sup>



*Mereruka's false door (R) bears an intact statue of Mereruka, Old Kingdom, Dynasty VI*

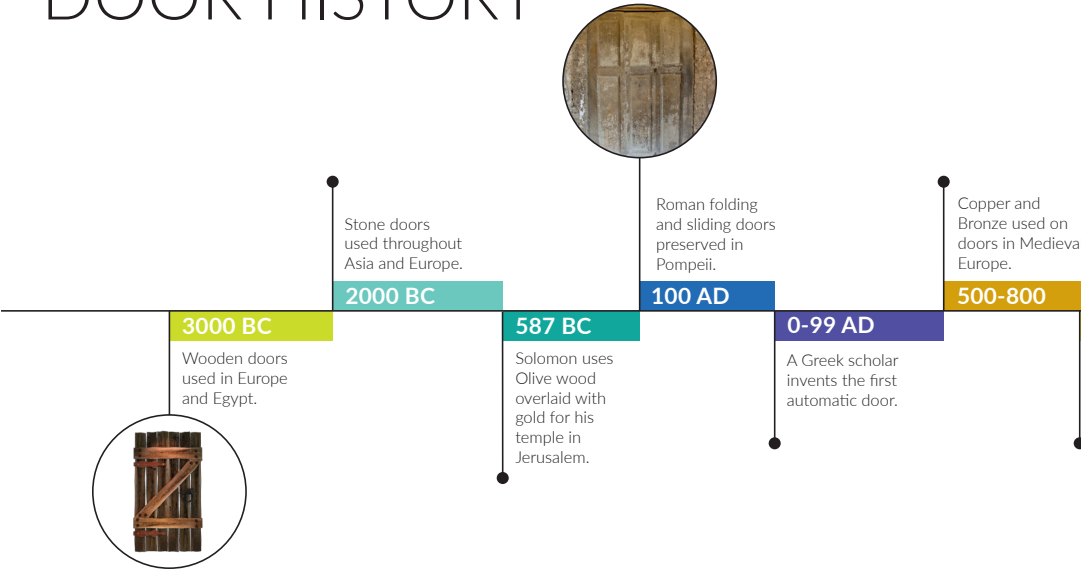
False doors were not copies of real doors, but a combination of an offering niche and a stela with hieroglyphic inscriptions. They are given the name because spiritual entities of the deceased were believed to have the ability to pass through the door.



# Timeline Infographic

MOMENTOUS EVENTS IN

## DOOR HISTORY







The revolving door invented in Germany.

1881

A researcher at Owens-Illinois creates mass production of glass strands (fiberglass).

1932



Special-Lite introduces the first door with FRP (fiber reinforced polymer) skins.

1981

1909

An American chemist invents the world's first synthetic plastic (polymer).

1970's

Polymer production surpasses production of steel worldwide.



1100-1400

Ornate panel and carved wood doors grace the best structures.



# Philosophical Doors

Beyond actual doors used for ingress and egress, doors have also been used in the philosophical sense to denote opportunity.

Perhaps you have heard the phrase, “When (or where) one door closes, another opens.” Let’s explore the origins of this phrase. Here, at least from an historical record perspective, the Spaniards seems to have led the charge.

In Spain in 1554, an anonymous author published an influential novella entitled, “La vida de Lazarillo de Tormes y de sus fortunas y adversidades” (The Life of Lazarillo de Tormes and His Fortunes and Adversities). A key phrase taken from the novella was translated into English in 1586 as “This proverbe was fulfilled, when one doore is shut the other openeth.”

Shortly thereafter in 1605, also in Spain, Miguel de Cervantes published his masterpiece, “Don Quixote de la Mancha.” Here, as translated into English in 1620, our would-be hero, speaking to his faithful sidekick, says the following:

“I think, Sancho, there is no proverb that is not true, all being maxims drawn from experience itself, the mother of all the sciences, especially that one that says, ‘Where one door shuts, another opens.’” (Chapter XXI)



*Bronze statues of Don Quixote and Sancho Panza at the Plaza de España, Madrid, Spain.*

It seems clear from this writing that such expressions about doors had become commonplace in Europe during the 16th and 17th centuries.

In our modern era, more complete phrases have been formed. In 1909, for example, a Vermont newspaper published the following quote: “When one door closes another always opens, but we usually look so

long, so intently and so sorrowfully upon the closed door that we do not see the one that has opened.” Its origin has been disputed.

Numerous variations of this phrase came to life in the 20th century through such influential voices as Alexander Graham Bell and Helen Keller. The phrase has even taken on a more religious tone with variations such as: “When God closes a door, he opens a window.”

It would seem then that closed doors represent missed opportunity or pathways we should no longer pursue while open doors represent new opportunity or adventures.

**When one door  
closes, another  
opens.**

**Or you can open the  
closed door. That's  
how doors work.**

# The Problem with Doors<sup>9</sup>

Many of us have a love-hate relationship with doors. Overwhelmingly, this leans toward love. After all, they serve us by providing convenient ingress and egress. They protect us from such things as the weather or unwanted visitors. They lend us privacy. And many are majestic pieces of art. What's not to love?

And the true value of doors? Just ask someone who's survived a zombie outbreak!



But there is a problem with many doors. Or, we could say the problem is in us. What is it? We hate to touch doors. Why? One word: germs. Yes, many of us are germaphobes and the thought of placing our hand where MANY others have placed theirs, is just . . . well . . . uncomfortable. And unsanitary!

In fact, we will put ourselves through all sorts of contortions to avoid touching the door with exposed skin. Or if it has to be skin, such as handles on the pull side, we'll try to use one or two digits, the outside of our hand, our elbows, our umbrella, or whatever. Round handles, are, of course, the worst. There's no choice but to fully grasp them.

In fact, this reminds me of getting gasoline in my car. Yes, I also hate to touch that fuel pump handle that so many have touched before me. That's why, for one reason and one reason only, I like winter: I can wear gloves without looking foolish. But I digress.

Those of us in the door trade will go to great lengths to make

touching the door easy. We'll even place push plates on doors that really don't need them, only to have users touch anywhere but that plate!

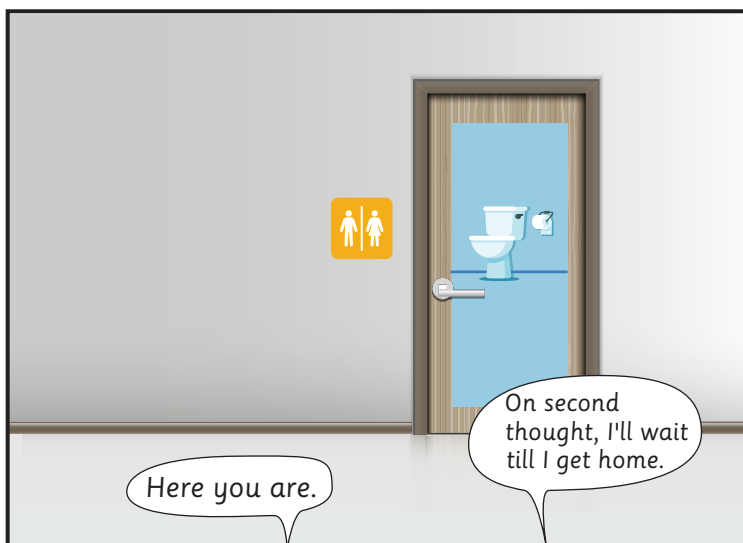
Now, I can be relatively happy on the push side of a door. After all, I have a shoulder, my forearm, my hip, or my rear end that I can use to get through such a door. This can, of course, be somewhat dangerous for someone who may be on the other side at the same time! And, yes, the return trip is more problematic.

Some hardware manufacturers have introduced antimicrobial finishes. They may claim to have a lifetime treatment. Now, I'm all for advancing technologies that make life better. But would I trust these handles more than another? Not likely. It just doesn't make sense to me that the finish on hardware could really mitigate the effects of germs, viruses, bacteria, and fungi along with a host of other nasty things that can cling to the door or its hardware.

No, I would need to see something equivalent to a bug zapper at work to put my full trust into touching the door or its hardware.

So, the next time you are in the mood to observe people entering or leaving through a door, take note of their touching patterns. I'll be the one reaching high on the push side, up where no one has gone before. (Or, at least that's what I tell myself.) And, on the pull side, I'll either be daintily touching the handle with my pinkie or I'll be wearing gloves in 95°F temps.

And, if you see me in distress, toss me a bottle of hand sanitizer (unopened container preferred).



Ben H. Dorsey III

Door Stops

# Door Construction Awards

The **Heritage Award** for the earliest doors and the classiest doors for interior purposes goes to WOOD. Origins: by 3000 BC

The **Prolific Award** for the most economical and most abundantly used type of door goes to HOLLOW METAL (steel). Origins: 1870 to 1900 A.D.

The **Versatility Award** goes to ALUMINUM STILE AND RAIL (Monumental) for forming both commonplace and grand entrances. Origins: 1950 to 1970 A.D.

The **Resilience Award** goes to FRP (fiber reinforced polyester) and aluminum hybrid doors for surviving daily abuse and heavy use. Origins: 1981 A.D.

The **Alien Environment Award** goes to FIBERGLASS for its imperviousness to water and corrosive liquids and gases. Origins: 1983 A.D.

The **Minimalist Award** goes to Frameless GLASS for going it alone in both swing door and sliding door configurations. Origins: Modern



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Door Stops



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*Definition of a door: what a dog is always on the wrong side of*  
(Ogden Nash)

*Toughest job I've ever had: selling doors door-to-door*  
(Ben Bailey)

*Did you hear about the person who invented the door knocker?  
He won a no-bell prize.*

*When is a door not a door? When it's ajar.*

*Knock, knock!*

*Who's there?*

*Adore.*

*Adore who?*

*Adore is between you and me!*



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