



COMPAGNIA DELLO STILE PISANO

# New Year's Eve in Pisan Style



# The calculation of time

The current calendar starts on January 1st and ends on December 31st. However, this has not always been the case, as the measurement of time has evolved based on the customs and traditions of different cultures. The topic is quite complex, so let's explore some of the systems that were in use during the Middle Ages.

## INSIGHT: THE CALENDAR

The calendar gets its name from the Roman term "**Calends**," which referred to the first day of each month according to the traditional timekeeping established by Romulus. Initially, this was a lunar calendar divided into ten months, starting with the full moon of March. The Latin word "mensis" actually comes from an Indo-European term meaning "moon," which is related to the German word "Mond" and the English word "moon." There were 61 winter days that were not counted, and the counting would resume in March. This omission occurred because, during winter, there was little need to track dates, as **calendars primarily served as account books**.

The term "Calenda" in Latin is derived from the verb "calare," meaning "to call" or "to summon," because on those days, people were called together to announce celebrations, games, and noteworthy events.

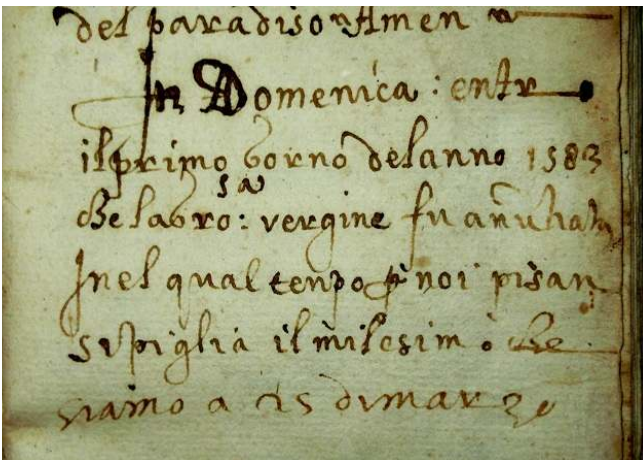
According to tradition, Numa Pompilius, the second king of Rome, added the months of January and February. To align the calendar with the tropical year, an intercalary month called "Mercedonius" was occasionally added at the discretion of the Pontifex Maximus.

The calendar was later reformed by Julius Caesar, resulting in what is known as the "Julian calendar," which closely resembles our current system and introduced the concept of the leap year. This method of timekeeping was effective and remained in use until 1582, when the reform initiated by Pope Gregory XIII was implemented.

# Ab incarnatione Calendar

The ab incarnation calendar model marked the beginning of the year on **March 25**, which is recognized as the incarnation of Jesus Christ. This date was chosen from a Christian perspective because it corresponds to the conception of Jesus, nine months prior to his birth on December 25. It's important to note that these dates were not originally established by Christianity; they were also used by various earlier religions, including Mithraism, for astrological reasons. Specifically, these dates are associated with the **equinoxes** and **solstices** that govern life on Earth. In ancient times, the sun was crucial, as its light and warmth supported life. The winter solstice, when the day is shorter than the night, was perceived as the birth (or rebirth) of God, since from that point onward days would gradually become longer, symbolizing the return of light and life. Conversely, during the summer solstice, when days are longer than nights, the full power of the deity was celebrated with festivities and bonfires— this tradition found its way into Christianity as the fires of San Giovanni. The variability of these dates is attributed to the **precession of the equinoxes**.

The *ab incarnatione* calendar was used in cities like **Pisa**, **Florence**, and **Siena**. However, while Florence and Siena began the year three months later than today's calendar, **Pisa started the year nine months earlier**.



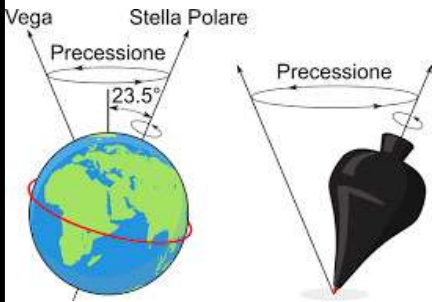
As an illustration, the date inscribed on the bell tower of the cathedral, marked as August 1174, follows the Pisan style and actually corresponds to August 1173 in today's calendar.

## INSIGHT:

# THE PRECESSION OF THE EQUINOXES

The equinoxes and solstices do not remain fixed in the calendar, regardless of the method of timekeeping used. This is due to the Earth's movement, which resembles that of a spinning top, as it slowly and continuously changes the orientation of its axis. This motion completes a full rotation approximately every 25,772 years, a period known as the Platonic year. This phenomenon, known as precession, has various effects, particularly on the equinoxes.

The line of equinoxes is an imaginary line that connects the point of the spring equinox with that of the autumn equinox. This line shifts by approximately  $1^\circ$  every 71.6 years. This gradual movement is referred to as precession, derived from the Latin term "praecessio," meaning "that which comes first."



As a result of this precession, the cycle of seasons occurs slightly earlier each year when comparing the tropical year (the time taken by the Sun to return to its usual position as seen from Earth) and the sidereal year (the time taken by the Sun to return to its position concerning the fixed stars). This leads to an advancement of about 20 minutes each year.

The Julian calendar, in use since the time of Julius Caesar, was based on the tropical year. Although it included a leap year every four years, this system still accumulated a few extra minutes each year. By the 16th century, this accumulation had reached 10 days. To correct this discrepancy, the Gregorian calendar was introduced, which eliminated certain leap years, particularly those centenary years (ending in 00) that are not divisible by 400. This adjustment made the average year much closer to the tropical year, differing by only a few seconds. In 1582, in order to realign the calendar with the actual dates of the equinoxes, 10 days were removed from the calendar, resulting in a transition from Thursday, October 4, to Friday, October 15.

## Ab Nativitate Calendar

This method of calculating the New Year is similar to the *ab incarnatione* style, as it originally designated **December 25** (the winter solstice and the birth of Jesus Christ in Christian tradition) as the first day of the year. This dating system was used in places like **Arezzo** and **Rome**.

## Ab Circumcisione Calendar

This is the modern calendar, which marks **January 1** as New Year's Day, originated during the time of Julius Caesar but became more widely adopted during the Renaissance. This shift began in Germany in 1544, followed by France in 1564, the Papal States in 1582, Scotland in 1600, and England in 1752. **In the Grand Duchy of Tuscany, this calendar reform was only implemented on November 20, 1749, by decree of Francis Stephen of Lorraine.**



*A plaque placed under the loggias of Palazzo Pretorio in 1749 following the Grand Ducal decree that established the ab circumcisionem calendar throughout Tuscany.*

Imagine the confusion the Habsburg-Lorraine must have found when, having taken over as the new Grand Dukes, they found a territory divided into different calendars with documents of the same period that however had different dates in Pisa and Florence!

# INSIGHT: THE ABOLITION OF THE PISAN CALENDAR

As previously mentioned, on November 20, 1749, all existing calendars in the Grand Duchy were abolished in favor of the *ab circumcisonem* calendar, which is the same type we use today. This event is commemorated by a plaque located in Pisa, beneath the loggias of the Palazzo Pretorio.

The inscription reads:

IMP. CAES. FRANCISCUS PIUS FELIX AUG.  
LOTHARINGIAE BARRI ET MAGNUS ETRURIAE DUX  
BONO REIP. NATUS CUSTOS LIBERTATIS  
AMPLIFICATOR PACIS CONCORDIAE VINDEIX  
SAECULI RESTITUTOR  
HUMANAE SALUTIS EPOCHAM ANNOSQ. AB TUSCIAE  
POPULIS DIVERSO INITIO COMPUTARI SOLITOS  
AD OMNEM CONFUSIONEM ET DISCERNENDAE  
AETATIS DIFFICULTATEM AMOLIENDAM UNA EADEMQ.  
FORMA ET COMMUNIBUS AUSPICIS AB UNIVERSIS  
LEGE LATA XII KL. DECEMBREIS ANNO MDCCXXXVIII  
INCHOARI ITA IUSSIT UT NON QUEMADMODUM PRAETER  
ROMANI IMPERI MOREM HACTENUS SERVATUM  
FUERAT SED VERTENTE ANNO MDCCL AC DEINCEPS  
IN PERPETUUM KALENDAE IANUARIAE QUAE NOVUM  
ANNUM APERIUNT CETERIS GENTIBUS UNANIMI ETIAM  
TUSCORUM IN CONSIGNANDIS TEMPORIBUS CONSENSIONE  
CELEBRARENTUR

The translation of which is as follows:

The Emperor (and) Caesar Francis, Pius, Fortunatus, Augustus, Duke of Lorraine and Bar, and Grand Duke of Tuscany, born for the good of the community, guardian of liberty, consolidator of peace, defender of harmony, and restorer of the present age, hereby establishes the following:

- To eliminate all confusion and difficulty in the computation of time, it is decreed that, by the law of November 20, 1749, the division of the year and the counting of years in the era of Christ—traditionally marked by the peoples of Etruria with their own unique starting point—will now begin uniformly for all, with common intentions.
- Starting from the year 1750 and continuing indefinitely, the Tuscans will adopt the use of the calends of January, which marks the beginning of the year for all other peoples, in their recording of dates. This change is intended to promote a spirit of unanimous harmony, unlike the practices followed until now, which were contrary to the customs of the Roman Empire.

# Ab Resurrectione Calendar

Also known as *ab Paschale* or *ab Passione Domini*, this is a (luckily!) rare calendar that began the year with the Christian celebration of **Easter**. Since Easter is a movable feast, calculating the year of a document using this calendar can be quite complex. Although it was not widely used in Italy, it was more common in medieval France.

## Byzantine Style

The Byzantine calendar was used in the Eastern Roman Empire and is often referred to by that name. **It began on September 1, which was considered the date of creation, and its year 0 was set at 5509 BC. This calendar was in use starting from 312 AD.** Although it eventually fell out of use in Western territories, it remained in effect in Eastern territories until the Russian Emperor Peter I the Great abolished it in 1699, transitioning to the Gregorian calendar.



*Discussion on the calendar reform under Pope Gregory XIII replaced by the Gregorian calendar, Rome, 15 October 1582.*

*State Archives of Siena.*

# Venetian Style

The Venetian style (*more veneto*), which is specific to the Republic of Venice, marked the beginning of the year on **March 1st**. This practice has ancient roots, similar to the Roman Calendar and was exclusively used by the Republic of Venice. In contrast, ecclesiastical authorities and the territories under its control utilized the *ad circum-cisionem* or *ab nativitatem* systems. The Venetian style fell into disuse after the end of the Republic of Venice in 1797.

## I festeggiamenti

The arrival of the new year was once perceived quite differently than it is today. Nowadays, we check the clock, await midnight, and then celebrate, often starting the evening with a big dinner. However, in the past, the specific date didn't hold much significance for most people. Whether it was January 1st, April 5th, or October 23rd mattered primarily to bureaucrats and administrators. These precise dates were used to enforce laws or decrees, but for ordinary people, every day was essentially the same. The only important aspects were the hours of daylight available for work and the changing seasons. No one would have thought of celebrating the new year with fireworks in 1253.

Moreover, the concept of marking a new year at midnight was not universally accepted. In the Pisan calendar, the new year was celebrated not at midnight but at **midday**. People didn't have wristwatches; instead, they could determine the time through sundials or architectural features of their buildings. The shadows cast by specific gnomons and the light coming through particular windows indicated

the time of year to those who understood how to interpret them. Unfortunately, this tradition has been lost over time. Although many signs remain, we no longer know how to read them.



*Sundial on the parish church of Santa Maria in Vicopisano*



In our Primatial church, there was once a “sundial” that indicated the beginning of the Pisan Year inside the Cathedral.

Unfortunately, many changes made to the Cathedral over the years have erased this and other clocks, particularly due to the construction of the sacristies. The tradition of the now-famous “sun ray” is a reinvention from the early 20th century. Currently, a ray of sunlight coming from a small window on the south side of the Cathedral illuminates a specific point on the opposite side, marked by an egg-shaped bracket, precisely at midday on March 25.



This clock, as previously mentioned, existed in the Middle Ages, but it was somewhat different. The ray of sunlight (the only constant) entered from another window, known as the “golden window,” which is now blocked.

This golden window likely displays a bas-relief of Roman spoils depicting two boats at the port, a design later replicated on the bell tower. The sunlight from this window was meant to hit an area near the high altar. However, since the entire floor was redone around the 17th century, we have lost the original reference point, which may still exist beneath the current flooring, similar to the part of the Cosmatesque mosaic under the floor in front of the painting of “Madonna di Sotto gli Organi”.





*Golden Window, through which a ray of light likely passed in medieval times, indicated the start of the new year inside the Cathedral.*

This clock is not the only one in the area; the entire square is filled with solar references. These include the faces on the southeast wall of the Campo Santo and the structure of the Baptistry. For more details, please refer to Burgalassi's work (see notes).

An interesting point to note is the discrepancy between solar time and actual time. Time varies with the progression of meridians relative to the reference point, which is conventionally set as the meridian passing through Greenwich. Currently, **Italy follows the time for the meridian that runs between Teroli and Mount Etna (as per the royal decree of August 10, 1893)**. There is a difference of about **12 minutes** between Pisa and that meridian. As a result, the mid-day we observe according to the clock and the ray of sunlight "reconstructed" at the beginning of the 20th century does not align with the true astronomical Pisan New Year's Eve, which actually occurs approximately 12 minutes earlier.

**Recommended reading:**

- S. Burgalassi, A. Zampieri, *Pisa e il computo del tempo*, ETS 1999
- S. Costanzo, *Calendario Pisano—The Pisan Calendar, Linee Infinite*, 2019
- A. Bargagna, C. Celli, *Le tre età di Pisa. Il Capodanno Pisano e lo scorrere del tempo*, Marchetti, 2016

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