

# Engineers and Artists: Influences on Colonial Brazilian Architecture

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In Brazilian colonial architecture, influences came not only from Portuguese architects and craftspeople from Portugal and Africa, but also from artists and engineers. This paper argues that not only architects, but also the engineers and artists who worked in Brazil had important roles in both the design and construction of the architecture and in the process of educating the future designers of Brazil's built form. It provides evidence towards the collection of a body of knowledge about the contributions that led to the unique qualities exhibited in some of the colonial architecture in Brazil. The buildings they designed, or in some way influenced, serve as reminders to practitioners and teachers of architecture to look beyond the boundaries of the profession for both inspiration and technical expertise.

## THE TRAINING OF ENGINEERS AND ARCHITECTS IN COLONIAL BRAZIL

In the period of Portuguese colonization, some settlers of the captaincies in the colony of Brazil saw architecture as a device to create a cultured and civilized society. In 1768, Luis António de Souza, the governor of São Paulo, wrote:

"One of the things that the most cultivated nations are accustomed to tak[ing] care of in the present time is the symmetry and harmony of buildings which are newly arising in cities and towns, so that from their appearance will result not only public comfort, but also the pleasure with which populations are made most appealing and competent, immediately knowing from the good order, with which they are disposed, the lawfulness and culture of their inhabitants.<sup>1</sup>

This attitude may have been pervasive at that time, and perhaps earlier in the colonial period as well. This is no surprise, for in Portugal, the colonizing power, the response to devastation was an architectural one. Immediately rebuilding the city core with elegant yet spare architecture was seen as a way to restore the shattered infrastructure of Lisbon after the devastating earthquake of 1755. To this end, the powerful Marquis de Pombal assembled a team of engineers to design the new city center. In the same way, to provide the architecture Souza and his predecessors desired in Brazil, not only architects, but also artisans, builders, artists, and many engineers had been settling in the colony for some time, and were the designers of the larger public and religious buildings.

This paper argues that not only architects, but also the engineers and artists who worked in Brazil had important roles in both the design and construction of architecture and in the process of educating the future designers of Brazil's built environment. It provides evidence towards the collection of a body of knowledge about the contributions that led to the unique qualities exhibited in some of the colonial architecture in Brazil. The knowledge transmitted by Portuguese engineers and artists to the young Brazilian designers is one factor that may have contributed to the exceptional buildings extant in Minas Gerais, Brazil, a state that contains a UNESCO World Heritage Site known for its architecture. Far from being just an issue of merely historical interest, this work is presented to demonstrate that it is important for practicing architects and teachers of architecture to tap into the resources provided by the fields of engineering and the arts in order to enrich architecture. This investigation will discuss two designers, and the architecture that resulted from their

designs and their teaching. One was an engineer, the other an artist, and both settled in Ouro Preto, Minas Gerais, Brazil, then called Vila Rica, a prosperous settlement that was experiencing tremendous population growth, due to the discovery of gold at the end of the 1600s. With this growth, the settlement also had a series of ambitious building campaigns, a phenomenon that makes this region a fertile source for studying architectural developments

### THE INFLUENCES ON THE COLONY

Influence from colonial artists and engineers occurred both directly through their own design work and indirectly, through their instruction of the next generation. By the mid 1700s, there were several schools for the training of military engineers in Brazil, and in Minas Gerais, small design schools were also formed.<sup>2</sup> Teachers included the military engineer *Brigadeiro Engenheiro* Jacques Funck (an Austrian), *Brigadeiro* José da Silva Pais, and the Portuguese engineer José Fernandes Pinto Alpoim, all engineers in Rio de Janeiro. Alpoim was sent by the Portuguese Crown specifically to teach at the school of fortification established by the Overseas Council. There was an urgency to this deployment of the talented to the colony.

“At this time the overseas council was making every effort to develop courses of instruction at the school of fortification in Rio de Janeiro, that were approved and functioning as a proper course [of study] with the objective to teach the necessary elements of defense for their coast in view of the tense situation between Portugal and Spain.”<sup>3</sup>

While in Rio, Alpoim wrote *Exame de Artilheiros* (Exam of Artillerymen) and other books.<sup>4</sup> There were many more engineers in Brazil at that time, including Manuel Saldanha, who lived and worked in Salvador, Bahia from 1749 to 1767. In addition to teaching at the military school, the Aula de Fortificação da Praça da Bahia, Saldanha is considered to have been responsible for the design of the church of Conceição da Praia in Salvador, a church made from Portuguese stone and shipped to Brazil as ballast in the trade vessels.<sup>5</sup>

The architectural historian Carlos Lemos writes: “The Portuguese military engineers that were in Brazil in the eighteenth century ignored the Baroque, preferring in their compositions, an emulation of the Renaissance.”<sup>6</sup> Indeed, Mannerist qualities can be seen in Saldanha’s Conceição da Praia of Salvador. Another eighteenth century example of how spare and elegant the work of Portuguese military engineers could be is the polygonal Nossa Senhora da Gloria church in Rio de Janeiro, built at same time the Rococo was flourishing in Europe (see illus. 1 and 2).

*Illus. 1. Nossa Senhora da Conceição da Praia, Salvador, Bahia, Brazil*



### ARCHITECTURAL PUBLICATIONS AND EXERCISE BOOKS

The knowledge Brazilian architects and engineers had of European architecture was considerable, thanks in part to eighteenth-century drawing books by and for architects and engineers in Brazil. They are remarkably similar to drawing books and treatises used in Portuguese schools of that period and earlier, for example, books by Francisco de Holanda (1517-1584), Luiz Serrao Pimentel (1613-1678) who wrote several books on construction as the director of the Aula de Fortificação e Architectura

Militar (a military engineering and architecture school) in Lisbon, and Filipo Terzi, whose treatise was published around 1578.<sup>7</sup> In addition, in the seventeenth century, the books *Desenhos e plantas Illuminades do Recife de Pernambuco (Illustrated Designs and Plans of Recife, Pernambuco)* (1631–1633), and *Livro dos Praças de Portugal com suas fortificações (Book of the Plazas of Portugal with its fortifications)* (1663) were also published. Important examples of this type of work are the exercise books drawn by military engineers in Bahia. Some of these are preserved, including one from 1778–1779 by Joaquim da Silva, and a set of drawings by Manuel Antônio Ribeiro. Ribeiro's folio includes geometric shapes and continues with drawings of whipping posts (*pelhourinhos*), chapels, towers, the architectural orders, including a twisted solomonic column (*coluna torsida*) and the mechanics of how to design one. It concludes with plans of fortified towns in Europe, and the basic elements of fortification design. Ribeiro's book contains much the same information as Terzi's earlier treatise, demonstrating that treatises of this type may have been available both to the immigrant designers and the generation of artists, architects, and engineers born in Brazil.<sup>8</sup>

### ENGINEERING AND ART: TWO DESIGNERS IN BRAZIL

The two designers discussed here, the Engineer José Fernandes Pinto Alpoim and the artist João Gomes Batista were both born in Portugal, they lived for a time in Rio de Janeiro, and then settled in Ouro Preto.

*José Fernandes Pinto Alpoim (1700 to 1765)*

*José Fernandes Pinto*

Alpoim is a classic example of the Brazilian immigrant military engineer.<sup>9</sup> In the 1730s he was educated in Viana do Castelo in the North of Portugal, at the school of military engineering (Aula de Engenharia Militar) founded by his uncle Coronel Engenheiro Manuel Pinto Vila Lobos. His father, Sargento Mor Pinto Alpoim, was also a military engineer, and some sources indicate that he may also have been a founder of the school. Early in his career, José Alpoim was assigned to the Alentejo region of Portugal, where he worked as Engineer of Fortifications, designing the Praça de Almeida.<sup>10</sup> He was transferred to Lisbon in 1738 and then to Rio de Janeiro that same year. After teaching and

practicing in Rio, he was assigned to work in Ouro Preto. He was perhaps summoned by his friend, the governor Gomes Freire de Andrade. There, the miners and military engineers Joseph Rodrigues de Oliveira (died 1776) and Pedro Gomes Chaves (active in Minas Gerais before 1722) had already made an impact on the landscape.<sup>11</sup> Oliveira designed military residences in the area in 1722, and the work of Chaves can be seen in the parish church of Nossa Senhora do Pilar, for in 1741, Chaves is thought to have been in charge of its major rebuilding project, involving major additions and changes to the nave and chancel.<sup>12</sup>

At the same time the church construction was underway, Alpoim had designed the first phase of an important civic building, the Governor's Palace (Palacio dos Governadores, now the School of Mines at the University of Minas Gerais), commissioned in 1736. (See illus. 3) It was for this project that he was summoned to work in Ouro Preto. Because he was trained as a military engineer his work should be looked at as a product of the education he received in military engineering in Viana do Castelo, in the north of Portugal.<sup>13</sup> Alpoim also designed the prison and town hall building on the main plaza, no longer standing.

In addition to the overall design of the Governor's Palace in Vila Rica and the court palace in Rio de Janeiro, Alpoim is credited with designing the row

*Illus. 2. Nossa Senhora da Glória, Rio de Janeiro*



house/commercial buildings on a street off the main plaza of Ouro Preto. Like the clean, spare lines of the Governor's palace, they are also marked by a simple and straightforward design, reminiscent of the later post-earthquake Pombaline housing and commercial blocks in Lisbon, also designed by engineers around the same time. Alpoim is also credited with the 1745 design of the town center of Mariana, the ecclesiastical center of the region, about twelve kilometers away. A rectilinear design with large squares that feature the prominent churches and town hall, it presages the regularized plan for the rebuilding of Lisbon's center by Pombal's team of engineers by more than ten years. Through the influence of Alpoim, and other Portuguese military engineers who practiced in Minas Gerais, the influence of military engineers extends from town planning to public and residential buildings.

*João Gomes Batista (1708 to circa 1780)*

Born in Lisbon in 1708, into a family of engravers, João Gomes Batista was apprenticed at the mint (Casa de Moeda) where he learned the art of engraving.<sup>14</sup>

At some point after 1730, about thirty years after the mint was transferred to Rio de Janeiro from Bahia, Batista moved there. One chronicler, Captain Joaquim José da Silva, stated

In the Court of Rio de Janeiro [João Gomes Batista] had had lessons from the renowned artist Francisco Vieira Matos, and was employed as an engraver of dies in the gold mint of said capital.<sup>15</sup>

Curiously, he was working under a false name (Tomaz Xavier de Andrade) at the mint.<sup>16</sup> In Rio he organized a school which was a training ground for a number of artisans and architects, including the Brazil-born architect, Antônio Fernandes Rodrigues. Batista's work was admired by contemporaries: "The gentler and daintier João Gomes Batista, foundry opener, who was educated at the Court...did excel everyone in design."<sup>17</sup> It is probably this talent that resulted in his nomination for the position of engraver at the mint that had been established in 1724 in Ouro Preto, a post he held from 1752–1784.<sup>18</sup>

Information about any apprentices or pupils he may

have had in Ouro Preto is not substantiated, however it is thought that Antônio Francisco Lisboa, perhaps the most famous sculptor and architect of Brazil's colonial period, was his pupil, and that Batista tutored other prominent designers as well. Others thought to be Batista's students include Manuel Ribeiro Guimarães, who was the principal designer of the town hall (Casa de Camara e Cadeia) in Vila Rica built around 1784.<sup>19</sup>

## THE ARCHITECTURE

Both Alpoim and Batista were either directly or indirectly involved in the more notable architecture of Ouro Preto, Minas Gerais. They were the more notable figures among the many Mineiro engineers, architects, and artists who came from Portugal, where some trained in the engineering schools in the Minho region in the north (one such school was in Braga) and others were trained in similar schools in Lisbon.

Alpoim designed a Governor's palace on Ouro Preto's central plaza. It was constructed by both local masons and Manuel Francisco Lisboa, (sometimes called an architect, other times called a master mason). The Governor's Palace was prominently situated on the main plaza in town, and unusual on a number of fronts. For one, it was one of the early constructions of stone in the town.<sup>20</sup> In addition, the palace is also notable because Portuguese fortification vocabulary was used in the design. It has several cylindrical guard turrets that sit on top of the stuccoed and ramped entry walls leading to a raised courtyard in front of the building. The turrets terminate with prominent conical roofs. These turrets are practically the only detail along large expanses of unadorned exterior wall that face the plaza, relieved only by large rectilinear windows with only a curved lintel on the upper windows for adornment. There are a few similarities to neighboring buildings in the region including stuccoed exterior walls and similar windows. Also, like the churches and civic buildings in the immediate vicinity, the palace facade is symmetrical. The overall composition and effect differ dramatically from the other structures in the area however, through the addition of the turrets, the horizontality of the proportions, and the unornamented and imposing retaining walls that also serve to set the building apart from the plaza on which it sits.

The palace's spare military aesthetic must have been jarring to some townspeople, for one chroni-

cler commented on its aesthetic qualities thus:

The steel chisel of Alesandre Alves Moreira and his partners was exclusively employed in the stonework of the government palace, crudely designed by engineer José Fernandes Pinto Alpoim, with ramparts, bartizans [turrets], dungeon, courtyard and other military precautions.<sup>21</sup>

The aspects that made this building unsettling to the townspeople were likely the same that made it so different from the church of São Francisco de Assis, situated only blocks away.

The front façade of the church of São Francisco (a church for a Franciscan lay order), is generally acknowledged to be designed by Antônio Francisco Lisboa, who is one of Brazil's most famous colonial architects, and the son of the master mason Manuel Francisco Lisboa, mentioned above.<sup>22</sup> The church is arguably one of the greatest works in Vila Rica. This is due in part to Antônio Francisco Lisboa's façade, which provides considerable architectural drama and innovation (See illus. 4).

The carvings above the entry door of São Francisco, and the sculptural qualities of the church façade can be seen not only as the work of Lisboa, but also as evidence of Batista's tutelage. The medallion on the façade replaces what, in this town, is usually the place for an oculus, letting light into a balcony. Instead, Lisboa chose to use a carving that not only had narrative qualities, depicting Saint Francis gesturing to an angel, but also could easily be the model for a coin or medal. It is carved from the extremely soft soapstone found in the region, and this replaced the clay that would, in Europe, be used for a model of a die for the stamped coin. It displays the dynamic sense of movement that one could find in European prints of the period. The gesturing of Saint Francis pulls your eye through the piece, and the modeling of the clothing and images looks similar to European examples. Since Lisboa never went to Europe, it is probable that he learned the techniques for the execution of this piece from Batista. This is visual evidence that the tutelage of the engraver, Batista, had an effect on the artistic sensibilities and skills acquired by Lisboa. Unfortunately, this physical evidence of influence is all that remains.

In addition, the church of São Francisco was conceived of three dimensionally, rather than as an assemblage of flat planes. This expressive and integrated composition exudes tremendous energy, tension, and movement through spatial manipulation and the transformation of standard elements, expressed through three-dimensional interplay of the pediment, frontispiece, and bell towers. The placement of the bell towers, set back from the plane of the façade and tucked into the nave walls, results in the appearance of a twisting motion that creates a sense of tension. Adding to this is the pediment that appears to be broken and rotated to each side. The weight of these two fragments appears to sit on colossal columns below, which in turn are set at planes angled away from the front façade. The pediment appears to break open to reveal a more conventional crown pediment behind, and within that, the medallion is revealed. Above the medallion is a ribbon of trim that curves around the top, creating the bottom of a cornice.

Lisboa was born in Brazil, probably in Ouro Preto. The sophistication of his compositions, reminiscent of European masterpieces, prompted speculation that Lisboa had traveled to Europe for some of his training like his contemporary, the Brazil-born artist from Rio de Janeiro known as Mestre Valentim.<sup>23</sup> No evidence exists, however, of such a trip. Instead, his knowledge had to come from local Mineiros, immigrants from Portugal, Africa, migrants from Brazil's coast and other Brazil-born artists. Those most likely to be his tutors include his father, Manuel Francisco Lisboa, known to have given lessons in architecture between 1729 and 1759, a period coinciding with Antônio's childhood, and Batista, because Lisboa would have been the right age to begin an apprenticeship (fourteen) when Batista moved to town.<sup>24</sup> Another sculptor, the talented Portuguese artist Francisco Xavier de Brito, who did the wonderful, intricate carving inside the Pilar parish church, is also a likely influence for Lisboa's early training. However, Brito died shortly before Batista arrived, 1751, and could not have influenced Lisboa after he was 13 or 14 years old. In any case, it is thought that Brito's work that remained in the Pilar church influenced Lisboa's design of the retable inside the São Francisco church. Perhaps Lisboa apprenticed with Brito early on, and continued with Batista after Brito's death. We can only speculate.

Illus. 3. Governor's Palace, Ouro Preto.



Antônio Francisco Lisboa's work suggests that in addition to gaining architectural knowledge imparted by his master mason or architect father, he was trained under the Portuguese immigrant engraver and designer João Gomes Batista. The medallion of St Francis with an angel, located above the central entry door of the church of São Francisco de Assis, supports the hypothesis that he was a student of someone who knew how to create a model for a coin or medal.<sup>25</sup>

Both buildings, the São Francisco and the Governors Palace are major monumental works in Ouro Preto, and for that region at least, quite innovative. Neither one would have been possible without the sensibilities and skills of people outside the normal sphere of architecture, either through a direct design influence, such as Alpoim's design for the Governor's Palace, or indirectly, like Batista's teachings to Lisboa resulting in the São Francisco façade. In these different ways, Alpoim's engineering background and Batista's artistic background made their mark in the city of Ouro Preto, Minas Gerais. As such, the buildings they influenced serve as reminders to practitioners and teachers of architecture to look beyond the boundaries of the profession for both inspiration and technical expertise.

## NOTES

<sup>1</sup> Luiz Antônio de Souza, Governor of São Paulo, quoted in Roberta Marx Delson, "Planners and Reformers: Urban Architects of Late Eighteenth-Century Brazil," *Eighteenth-Century Studies*, Vol. 10, no. 1 (Autumn 1976): 48.

<sup>2</sup> There is evidence that instruction in engineering by the Portuguese military engineer José Paes Stevens was available to the residents of Brazil, in Pernambuco, as early as 1696. A military school that taught engineering, the Aula de Fortificação, was created in Rio de Janeiro by

Illus. 4. Medallion of the São Francisco church, Ouro Preto.



the Carta Regia of Dom Pedro II in 1699. In addition, a military engineering school was active in Salvador throughout the eighteenth century. For an extensive review of military engineers in Brazil, see Appendix I in Robert C. Smith, "Jesuit Buildings in Brazil," *The Art Bulletin*, 30 (1948): 207–211.

<sup>3</sup>—"Nessa Epoca, o Conselho Ultramarino estava empenhado em desenvolver o ensino da Aula de Fortificação do Rio de Janeiro, que passou, então a funcionar como curso regular, como objectivo de provar os elementos necessários a defesa do nosso litoral, em face da situação tensa entre Portugal e a Espanha." Aurelio de Lyra Tavares, *A engenharia militar portuguesa na construção do Brasil* (São Paulo: SPEME, 1965), 183.

<sup>4</sup> Tavares, 183.

<sup>5</sup> Smith, "Jesuit Buildings in Brazil," appendix I, 209. Smith suggested that the book on perspective by the Italian Father Pozzo and Bibena's stage sets were influential in the design of Nossa Senhora da Conceição da Praia. Robert C. Smith, "Nossa Senhora da Conceição da Praia and the Joanine Style in Brazil," *Journal of the Society of Architectural Historians* 15, no. 3 (Oct., 1956): 18, 21. See also Smith, "Jesuit Buildings in Brazil," 208–209. See also "Simposio: 300 anos da criação da aula de fortificação," Special issue, *Revista do Exército Brasileiro*, vol. 136 (1999).

<sup>6</sup> "Dos engenheiros militares portugueses que atuaram no Brasil no século XVIII e que ignoram o barroco, preferindo em suas composições, a contenção renascentista." Carlos Lemos, "No Brasil, a coexistência do maneirismo e do barroco até o advento do neoclássico histórico," *Barroco: Revista de Ensaio e Pesquisa* 15, 9 (1990/2): 255.

<sup>7</sup> Pimentel's most important treatise was *Methodo*

*lusitano de desenhar as fortificacoes das praças regulares e irregulares*," published in Lisbon in 1680. Smith, "Jesuit Buildings in Brazil," 208. A study comparing the various schools, the Aula de Fortificação e Arquitectura Militar in Lisbon with the earlier Aula dos Paços da Ribeira would provide interesting information on the variations between the architectural education system over time.

<sup>8</sup> Lemos, "No Brasil a coexistencia do Maneirismo e do Barroco," 252–253.

<sup>9</sup> The information for this paragraph comes from Aurelio de Lyra Tavares, *A engenharia militar portuguesa na construção do Brasil* (São Paulo: SPEME, 1965), 183–184; and Judith Martins, *Dicionario de Artistas e Artífices dos Seculos XVIII e XIX em Minas Gerais* (Rio de Janeiro: Publicações de IPHAN, 1974), 1: 23–27.

<sup>10</sup> In 1737, Alpoim "was nominated to be responsible for the engineering of fortifications of the Alentejo [a region in Portugal] for which he made the Praça of the Almeida under the direction of the Chief Engineer Manuel de Azevedo Fortes." "foi nomeado para o cargo de Engenheiro das Fortificacoes de Alentejo, com sede na Praça de Almeida, sob a direção do Engenheiro Mor Manuel de Azevedo Fortes." "Tavares," *Engenharia militar Portuguesa*, 183. Martins, *Dicionário*, 1:23. The *estilo Joanino*, or Joanine, was spread by Ludovice and his contemporaries. Like the military architecture, the Joanine was typically restrained (on the exterior at least) but often lacking the military vocabulary used in Manueline architecture (including turrets and passages cut from the thick poché of outer walls).

<sup>11</sup> The King ordered Chaves to leave Minas Gerais for Rio de Janeiro for the design of a plaza. Arquivo Historico Ultramarino, código 532, Caixa 3 Doc. 45. 1722.

<sup>12</sup> Arquivo Historico Ultramarino,, MG-Caixa 3, doc. 45, 252, 12 October 1722. Arquivo Historico Ultramarino, Illus. "Quarteis" MG, Cap. 1151 and "Quarteis" MG, Cap. 1152. Chaves came to Brazil when he was appointed by the Crown to work as an engenheiro sargento-mor (military engineer) in Salvador Bahia, where he not only practiced building design, but also taught engineering. Smith, "Jesuit Buildings in Brazil, 209.

<sup>13</sup> Martins, 1: 23.

<sup>14</sup> Information for this section is from Augusto de Lima Júnior, *O Aleijadinho e a arte colonial* (Rio de Janeiro, privately printed, 1942).

<sup>15</sup> Captain Joaquim José da Silva quoted by Rodrigo José Ferreira Bretas, in Bretas, "Biographic Outline Relating to the Late Antônio Francisco Lisboa," in *Passos da Paixão: O Aleijadinho*, ed. and commentary by Myriam Andrade Ribeiro de Oliveira, translated by Maria Cunha Brenner (Rio de Janeiro: Alumbamento, 1984 [first published circa 1858]), 23. This document can also be found in Portuguese as Rodrigo José Ferreira Bretas, "Traços biographicos relativos ao finado Antonio Francisco Lisboa," *Revista Arquivo Publico Mineiro*, 1 (1896): 163–174.

<sup>16</sup> Martins, 1:109.

<sup>17</sup> Silva, in Bretas "Biographic Outline," 23.

<sup>18</sup> Martins, 1: 109.

<sup>19</sup> Robert C. Smith, "Alguns desenhos de arquitetura," *Revista do Servico do Patrimonio Historico e Artístico Nacional* 4 (1940): 246.

<sup>20</sup> Martins, *Dicionário*, 1: 23, 132, 384. A full text of the contract is printed in *Revista Arquivo Publico Mineiro* 6 (1902): 570. Arquivo Historico Ultramarino, Ultra-Brasil/MG—Caixa 111, doc: 74.

<sup>21</sup> Bretas, "Traços biograficos," 169–170.

<sup>22</sup> Martins, *Dicionário*, 1: 366.

<sup>23</sup> Blunt, *Baroque and Rococo*, 326–328.

<sup>24</sup> Martins, *Dicionário*, 1:381.

<sup>25</sup> The hypothesis about João Batista's tutelage of Antônio Francisco Lisboa is that of Augusto de Lima Júnior. See Lima Júnior, *O Aleijadinho e a arte colonial*, 118. Batista's school taught "Joaquim Jose da Rocha, Joaquim Carneiro da Silva, Antônio Francisco Lisboa, Felix Jose da Rocha, Jose Tenorio, Manuel da Costa Francisco Carneiro, Ventura da Costa Rangel, Manuel Ribeiro Guimaraes, Jeronimo Nicolao de Carvalho" and others. Lima, 118.

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