



# American Journal of Multidisciplinary Research and Innovation (AJMRI)

ISSN: 2158-8155 (Online), 2832-4854 (Print)

VOLUME 3 ISSUE 3 (2024)



PUBLISHED BY: E-PALLI PUBLISHER, DELAWARE, USA

## St. William's Bell Tower: A Structure That Sinks

Edsel Harry R. Turda<sup>1\*</sup>

### Article Information

**Received:** April 05, 2024

**Accepted:** May 09, 2024

**Published:** May 14, 2024

### Keywords

*St. William's Bell Tower, Structure That Sinks, Case Study, Laoag City, Cultural Heritage*

### ABSTRACT

This study focuses on the Sinking Bell Tower's mysterious history and structural attributes. Located approximately 80 meters from St. William's Cathedral, this architectural oddity has puzzled visitors for centuries. Built after the 1707 earthquake, the tower exhibits remarkable resilience against minor seismic events, earning its classification as Earthquake Baroque style. Local artisans used bricks, molasses, and sablot plant leaves to construct the tower, resulting in a sturdy structure that stands at almost 150 feet. Historical accounts describe horseback riders passing through the tower's gates, an improbable feat today due to its lowered entrance. Additionally, the tower is believed to sink about an inch annually, leading to various theories about its subsidence, primarily linked to its sandy foundation and massive structure. This study interviewed 20 respondents, including students, tourists, and professionals, to determine whether the tower is genuinely sinking or if the land is rising. Most respondents (15 out of 20) believe that the Bell Tower is sinking, citing reasons such as the sandy foundation, the tower's weight, and its pointed base pushing the land downward. On the other hand, five respondents remain skeptical, attributing the sinking appearance to an optical illusion. From the majority responses of this study, the research affirms the belief that the Sinking Bell Tower is indeed sinking. Preserving this unique heritage is crucial, as it represents the region's history and serves as a symbol of the enduring past and a window to the future. The study advocates for the continued protection of this cultural treasure, ensuring its historical significance endures for future generations.

### INTRODUCTION

Being over a thousand kilometers from the Visayan Islands, the first point of entry for the Spaniards in 1521, Ilocos Region was a rather peculiar place for Spain to establish a stronghold. Yet after 333 years of Spanish rule over the archipelago, the cultural and religious traditions of Spain are still practiced in the region and many other parts of the Philippines today. Along with these intangible transformations are the indestructible structures that have withstood the test of time. Structures like the famed Sinking Bell Tower, the tallest historic building in Laoag City, the capital of Northern Ilocos.

One of the first oddities a visitor may notice is the tower's distance from the city's main cathedral, St. William's. Bell towers are commonly built attached to cathedrals or a few meters away, but for reasons unknown, St. William's bell tower was built about 80 meters from its doors.

The bell tower was presumably built after the 1707 earthquake. It has withstood several minor earthquakes since completion, this earning membership to the Earthquake Baroque style label by architecture scholars, along with several churches across Philippines and Guatemala. It was locally constructed by Ilocano artisans who used bricks joined by molasses and leaves from a local plant named sablot. With a foundation of 295 feet and a height of nearly 150 feet, it was a solid structure that towered over Ilocanos for centuries.

Stories from the past tell of people mounted on horses being able to pass through the tower's gates. However, the bell tower today is not accessible due to its low leveled

gate. The mysterious bell tower of Laoag City continues to spark the curiosities of locals and tourists. It is believed that the tower is sinking at a rate of an inch every year. There are not any conclusive scientific explanations presented to the public for its case yet, but one theory is that the tower being built on sandy land and its heavy and massive structure is causing it to slowly bury itself into the ground.

### LITERATURE REVIEW

The church is renowned for its "Sinking Bell Tower," which gradually subsides into the ground at a rate of approximately one inch per year. Despite having weathered numerous minor earthquakes since its construction, scholars have classified it as an Earthquake Baroque style structure. The tower, believed to have been erected in the aftermath of the 1707 earthquake, boasts a foundation measuring 90 meters (300 ft). It is constructed from locally manufactured bricks, bound together with molasses, sablot leaf juice, lime, and sand. The structure is reinforced by four substantial columns at each corner and features a winding stairway leading to the belfry. At one point, a large clock adorned the western face of the tower (Historical Markers, 1993).

Sited upon a sandy foundation, Laoag City's Sinking Bell Tower is in literal descent. If Pisa, Italy, boasts a Leaning Tower, the Philippines proudly possesses its own Sinking Tower, situated in Laoag, Ilocos Norte. This distinctive characteristic sets it apart from other bell towers worldwide.

<sup>1</sup> Department of Education-Laoag City, Brgy 23, San Matias, P. Gomez St. Laoag City, Philippines

\* Corresponding author's e-mail: [edselharry.turda@deped.gov.ph](mailto:edselharry.turda@deped.gov.ph)

This bell tower stands amidst the bustling commercial district of Laoag City, approximately one hundred steps away from St. William Cathedral. The sandy foundation, mirroring its proximity to a nearby river, underpins the tower's location. The encircling area sees a constant flow of daytime traffic, particularly tricycles and various commercial establishments with overhead wires. However, the tower remains a captivating presence, overshadowing the bustling surroundings.

As one of the most massive and tallest bell towers in the Philippines, this sinking bell tower currently stands at a height of 45 meters, subsiding at an approximate rate of one inch per year. It was originally constructed by the Augustinians on a sandy foundation in 1612, and the sinking phenomenon has been ongoing since, according to historians and experts.

In addition to its confirmed sinking, the tower slightly tilts to the north, earning it the title of the Leaning Tower. Its exposed bricks reflect its antiquity. The main entrance, as seen in the photo above, once accommodated a mounted rider, but due to the tower's sinking, only a standing individual can now enter with a slight bow.

The main doorway has noticeably subsided, with historians and experts estimating that it has sunk halfway from its original height. In contrast to bell towers in open and unobstructed locations, this tower seems to have adapted to its densely developed commercial surroundings.

Nonetheless, the grandeur of the sinking tower endures. The northern side of the tower reveals a multitude of exposed bricks. Contrary to any assumption that this tower is no longer functional, it remains operational, with six bells housed within still ringing to summon the faithful.

From various vantage points and angles, this bell tower consistently captivates photographers, whether they are amateurs or professionals. The best time to photograph this tower is in the afternoon, a few minutes before sunset, as the sunlight casts a radiant glow upon the tower while casting shadows on the structures below (Visitacion, 2006).

The main entrance, which once accommodated a mounted rider, now requires a standing individual to bow slightly for entry. The doorway has subsided considerably, with historians and experts approximating that it has sunk halfway from its original height. While the tower may be sinking, its historical significance and unique qualities ensure that its name will remain firmly afloat in fame. Paradoxically, the more the Sinking Bell Tower descends, the more it ascends in fame, etching its name into history books and tourism maps as an enduring landmark (Visitacion, 2006).

## MATERIALS AND METHODS

An interview was conducted to the respondents for the aim of data collection. A descriptive approach was deployed to analyze the collected data precisely. In this case study a critical instance case study is used because it is ideal for examining a specific event or situation,

focusing on only one or very few sites. This descriptive study uses interview method to obtain the needed data and determine the respondent's perspective on why the Bell Tower is called as Sinking Bell Tower. This is to get the perspective of the people overlooking the said Bell Tower.

This study was conducted at Laoag City involving 20 respondents including students, tourists, and professionals of the year 2022-2023

This study used a systematic random sampling technique. The respondents were the 20 respondents including students (9), tourists (4), and professionals (7). These respondents served as participants in the study. These respondents were those who willingly wanted to impart their perspectives in the study.

The study used an interview method for it seeks to know respondents' perspectives whether the Bell Tower sinks or the land rises. It also gave the respondents opportunity impart their perspectives basing on what they want to side on the given situation.

Data gathering device or tools in specific in specific forms used to come up with needed data to deal with the problem. The instrument used was in a form of interview method. The respondents were given a question to answer the problem of this study.

The researcher followed some procedures for them to achieve the objective of this this case study. First, the researcher formulated a question that answers the introduced problem of this study. Second, the researcher presented the formulated question to the research adviser and asked her approval before formally cascaded. Third, the researcher administered the interview phase among the respondents. Fourth, the researcher gathered and analyzed the data using descriptive analysis.

## RESULTS AND DISCUSSION

The gathering of data through an interview among twenty (20) respondents using a systematic random sampling resulted to just two (2) perspectives with different explanations. Below is the compilation of the interviewees' perspective about the topic:

"I think the constant repair of the road adds to the illusion that the bell tower sinks, since construction workers layer concrete foundations upon another." [S/C]

Czarina Duldulao, Science Teacher

"Applying my knowledge to the situation, there are some factors to consider: First, the material used in the tower, we all know that it is made up of solid brick which results to a high-rate density (amount of mass per unit of mass of an object.) Second, the gravitational force which surrounds us is equal to the weight on earth. With that, considering the heavy materials used to the tower, the pull of the gravity is greater. Third, the level of the tower in the residential area and the age of the tower. Lastly, the phenomenon, earth is sitting on the ring of fire, a reason why we are experiencing multiple earthquakes—the shaking and abnormal movements of the tectonic plates. In connection to that, the more the land is shaking the

more it affects the sinking of the tower. Thus, I strongly believe that the structure itself is really sinking.” [S/C]

Yasmin Beltran, Physics Teacher

“It is the weight of the tower that primarily makes the structure itself sink- the land rising is just an after effect.” [S/C]

Vincent Dwight Dela Cruz, Civil Engineer

“As far as I can remember, the bell tower sinks one inch every year due to its foundation. The kind of soil where it is erected is quite weak that it cannot even hold the whole of the bell tower. The land around the tower could also be a factor since it is a highway where it is always passed on by big vehicles which triggers the mainland of the tower to sink.” [S/C]

Jenalyne Mendoza, Tourism Graduate

“The very controversial sinking bell tower has two things to consider on which is which the reason is. First, the parameter of the land where the bell tower stands. Second, the land area itself rises not just because of the natural phenomenon of the earth due to multiple occurrences of earthquakes but also the addition of land ratio by means of cementing and construction of roads. In addition, I believe that both reasons draw illusion to our eyes which make the bell tower look like it’s sinking but I find the latter as more accepted reason.” [S/C]

Tourist, Arts Student

“Upon seeing it and probably observing it, the land just rises, not the bell tower that sinks, because every time we do road pavement, we are required to backfill. Even if we only do minor backfilling, there is still tendency that the land level rises.” [S/C]

Local Civil Engineer

“As an architecture student, I learned through time that the sinking bell tower does really sink due to the land or kind of soil where it is built.” [S/C]

Rolando Legaspi Jr., Architecture Intern

“I have found out that the history of the famed Sinking Bell Tower has gone through a lot of earthquakes. Also, knowing that the structure was built after the 1707 earthquake, it is really considered as an old one. Given these facts, I must agree that the baroque sinks slowly due to earthquakes and probably its massive weight and towering height.” [S/C]

Tourist from Manila

“At the very first glance, we can already say that the Sinking Bell Tower is called as such it is because of its wide circumference, huge tower and heavy material used—big bricks. More so, the base where it was built is sandy that gives a high tendency to make the Bell Tower sink. Scientifically speaking, the heavier the mass being placed in an area where the molecules are less dense the higher the probability will it collapse.” [S/C]

Gen Quina, Geodetic Engineer

“It’s really sinking because I remember someone claiming that the base of the bell tower is pointy, probably a pyramid-like structure which causes the bell tower to dig and bury itself to the ground.” [S/C]

University English Teacher

“It’s the land that sinks due to subsidence, thus, causing the tower to sink at the same time.” [S/C]

Ryan Domingo, English Teacher

It is sinking probably because of its inadequate foundation. [S/C]

Julia Bonotoan, Instructor

“The structure of the Bell Tower is heavy because it is made of bricks and also the foundation is sandy that’s why it is sinking.” [S/C]

Samantha Baradi, Nurse

“Apparently, the soil around the tower is weak. This could be due to erosion or an underground cavity. For land to rise, there needs to be tremendous force which can come from magma (eruption), the shifting of plates under the ocean’s ground level (plate tectonics theory), or the activity or fault lines (West Philippine Fault and Central Philippine Fault). So, in my opinion, the tower ‘sinks’ though technically it is the soil that is sinking. The tower is just being dragged down along.” [S/C]

Alfred David Calvelo, AB Language Graduate

“All I have in mind is that it is sinking, but then people say it is not and it is just due to road pavements. However, I’ve realized that my initial observation is correct, and I can say that it’s really sinking upon seeing it.” [S/C]

Tourist from nearby Province

“It is the structure that sinks. According to my grandmothers, it was erected on sand. The foundation is deep but still, the soil used was just sand. In addition to that, the bell tower is made up of pure concrete, both cement and bricks. People back then had to put a higher amount of cement so that the bell tower would hold its grounding. With this kind of infrastructure, having no metals to support it, is really heavy and may also explain that it is actually sinking.” [S/C]

Archie Blas, Instructor

“I’ve been in this city all of my life and come to observe the famous bell tower every now and then. Many say it is sinking however, upon discerning things regarding this sinking bell tower including a personal look on it, I believe that the continuous addition to the highway roads dictates the appearance of it. An appearance that looks like it is actually sinking when it is actually not.” [S/C]

Local College Student

“The intriguing bell tower of Laoag City continues to spark the interest of people visiting the Ilocos Norte province. One of the oddities a visitor may notice is the undeniable observation that the tower is sinking at a rate of an inch every year. Telltale signs indicate that it has been the emblem of the struggle and survival of the localities from the despotic colonizers. The bell tower was built after the 1707 earthquake. Fortunately, it has withstood several minor earthquakes since its completion. However, trivial facts have it, whether or not the cause of its “submerging” is because of the structure and foundation of the building itself or perhaps the land that elevates over time. Personally, I think it’s the structure that causes the tower to sink. It’s been decades since it was built, it has surpassed phenomenological

occurrences. Although, it would be a burlesque proclamation if over those times, there have been no damaged inflicted. Its structure, the walls, the cements, the material used. Logically speaking, it's possible that it's the reason why the bell tower is sinking. In a figurative way, I'd like to disclose that the oddity of this spectacle is the portrayal of a dynamic world, that the place and the people living in the community is changing, thus the complacency is rather vague because of the tremendous structural, sociological changes that are happening. There aren't any conclusive scientific explanations for this, but one accepted theory is that the tower being built on sandy land and its heavy and massive structure is causing it to slowly bury itself into the ground." [S/C]

Thea Dela Cruz, Instructor

"Before arrival, I did my research about Laoag, and I was attracted in one of the province landmark's name – Sinking Bell Tower. It interests me so much that I find time to take a closer look to it. Until today, I realized by myself that it is really sinking probably because of its huge structure." [S/C]

Tourist from Manila

"It is the land that rises not the bell tower that sinks, because geologically speaking, our plates or land has risen." [S/C]

Neil Villaruel, AB English Graduate

**Table 1:** Perspectives on the St. William's Bell Tower (Sinking Bell Tower)

Perspectives	f
The St. William Bell Tower Sinks	15
The Land Around the St. William Bell Tower Rises	5
N = 20	

The table states that 15 out of the 20 respondents asked on their perspectives on the St. William's Bell Tower (Sinking Bell Tower) have answered that it is the bell tower itself that sinks while 5 of them have answered that it is the land around the St. William Bell Tower that rises. It implies that most of the respondents are into the idea that the bell tower is really sinking.

Based on the gathered data in the interview, the researcher draws a summary of the respondents' perspectives. While majority of the interviewees claim that the said bell tower is sinking, their explanations remained to their objectives. Some of their justifiable theories include one from a Physics Teacher which states that "The gravitational force which surrounds us is equal to the weight on earth. With that, considering the heavy materials used to the tower, the pull of the gravity is greater", which is true according to Newton's Law of Universal Gravitation that says about a story of the 'apple'— The apple started in the tree and landed on the Earth, which means there must be a force of attraction between the apple and the Earth (Jha, 2013). A focal point among the interviewees, who is a tourist and an Arts Student also say that ".the bell tower sinks just because of the multiple occurrence of earthquakes

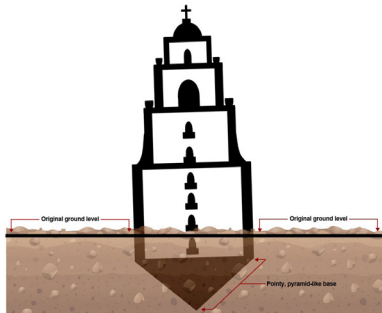
which is a natural phenomenon of the earth" which is quite reasonable because according to the history books, the bell tower was presumably built after the 1707 earthquake (Visitacion, 2006). Moreover, one of them completely opposes to the idea that it is the land that rises which causes the appearance of the bell tower incomplete because according to him, who is an a AB Language Student, "for land to rise, there needs to be tremendous force which can come from magma (eruption), the shifting of plates under the ocean's ground level, or the activity or fault lines (West Philippine Fault and Central Philippine Fault)" and science tells that the movement of continents is caused by what's happening beneath Earth's crust. Seismic waves, which are waves of energy that occur when tectonic plates push against each other and pull apart, cause rock within the Earth to suddenly break, causing disruption and in some cases, even explosion or volcanoes (Science Aid, 2019). The illustration below (Figure 1) shows how most of the interviewees perceive the reason behind the bell tower's sinking theory. Most of them claim that it is basically the (1) 'materials used' which is composed of heavy bricks and cement, the (2) weak soil which they identify as just sand and probably because of its (3) towering height that caused its sinking appearance. The illustration also shows that it is slightly leaning towards north, which is also obvious in photos and in actual look.



**Figure 1:** The bell tower sinking to the ground

While most of the interviewees say that the Sinking Bell Tower sinks an inch every year and state proofs depicting the length of the bell tower's main door as that of the St. William Cathedral's that even a man riding in a horse could enter unbowed, one unpopular opinion came the most interesting among all the heard theories. This theory is from an English Teacher, the 'pointy, pyramid-like base' (see Figure 2 below) which claims that the actual base of the Sinking Bell Tower which makes it sink is formed in a pyramid-like structure. The pointed base helps the bell tower dig the land and bury its own body in the ground. The idea that the St. William Cathedral's own Bell Tower is actually sinking is the most popular and well known of all the perspectives regarding its name "Sinking Bell Tower", however, some of the people who happen to observe the earthquake baroque bell tower also shared their theories regarding the famed tower. While the first theory states their explanations through and with scientific basis, the other side of the theory also explains

its position or perspective logically. The remaining assertions regarding the Sinking Bell Tower say that it is not actually the structure that sinks but the land that rises. One of the interviewees, who is a Science Teacher told that “the constant repair of the road adds to the illusion that the bell tower sinks, since construction workers layer



**Figure 2:** The Sinking Bell Tower and its pointy base

to backfill. Even if we only do minor backfilling, there is still tendency that the land level rises.” The illustration below (Figure 3) best explains the reason that is mostly involved under this theory.

### CONCLUSION

Based on the result of this study, the researcher concludes that the Bell Tower is really sinking. With the 20 total number of respondents 15 of them have said that it is the Bell Tower that sinks according to the following reasons:

1. The land where the Bell Tower is sandy that makes it a weak foundation.
2. The huge, heavy - like structure, and wide circumference of the bell tower
3. The base of the Bell Tower is pointed that pushes that land area downward with the help of its heavy structure.

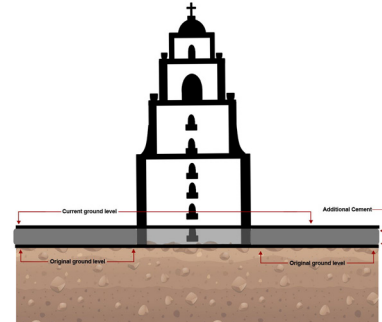
Moreover, the City Tourism of Laoag declared earlier in 2006 that it is believed the tower is sinking at a rate of an inch every year. There aren't any conclusive scientific explanations for this, but one accepted theory is that the tower being built on sandy land and its heavy and massive structure is causing it to slowly bury itself into the ground. Stories from the past tell of people mounted on horses being able to pass through the tower's gates. However, if one visits the bell tower today, they will realize they would have to almost crawl through its gates to enter the bell tower.

Consequently, no further revisions have been made in relation to the case of the sinking bell tower.

On the other hand, out of 20 respondents, 5 of them are still not convinced that the bell tower is sinking. They believe that it is just an illusion of the eyes that makes it look like it is sinking even though it is only the land that rises. By that the researcher concludes that it is really the Bell Tower that sinks supporting the 15 respondents who answered.

With the formulated conclusion the researcher came up with a recommendation that even if majority of

concrete foundations upon another” which could also be an acceptable theory since it is best explains the situation of the province and city where the structure is being seen at. One local Civil Engineer that was interviewed tells that “The land just rises, not the bell tower that sinks, because every time we do road pavement, we are required



**Figure 3:** The Sinking Bell Tower and the Land Rise

the respondents have imparted their perspectives that the Bell Tower is really sinking, the people around this cultural heritage must inculcate in their minds that along with their curiosity is the continues preservation of this structure. It is very important to preserve the said cultural heritage because it is the reflection of the past chapters of the place and have lived for many years as part of the living history. Moreover, the said cultural heritage will serve as a looking glass of the next generations to come. The researcher looks forward that the word sinking to the given name of the Bell Tower will not go the other way around. That along with its sinking reputation, is the sinking of its history to the chapters of the place and the minds of the people around the place.

### REFERENCES

- Aid, S. (2019, October). What Is the Theory of Plate Tectonics. Retrieved from Make Things Better: [https://scienceaid.net/What\\_Is\\_the\\_Theory\\_of\\_Plate\\_Tectonics](https://scienceaid.net/What_Is_the_Theory_of_Plate_Tectonics)
- Author, N. (1993). *Historical Markers*. In N. Author (Ed.), *Historical Markers*. Manila: Manila National Historical Institute.
- Guquib, E. (2012, January 31). Sinking Bell Tower: The Beauty that Never Sinks. Retrieved from Edmaration: <https://www.edmaration.com/2012/01/laoags-sinking-bell-tower-yet-it-floats.html>
- Jha, A. (2013, October 13). Newton's Universal Law of Gravitation. Retrieved from The Guardian: <https://www.theguardian.com/science/2013/oct/13/newtons-universal-law-of-gravitation>
- Kasaysayan, K. (2019). *Laoag City Bell Tower*. Manila.
- Mari. (2018, August 19). The Sinking Bell Tower of Laoag. Retrieved from Live, Life and Love: <https://www.lifelifeandlove.com/the-sinking-bell-tower-of-laoag/>
- Marker, T. T. (2017, April 13). Ilocandia, Nagpintas Gayam! Retrieved from Weebly: <http://travelmarker.weebly.com/blog/category/ilocandia-2017>

- Pascua, R. (2022, July 01) Senior High School Students' Experiences of and Reflections on Ilokano Culture and Heritage Studies: <http://https://journals.e-palli.com/home/index.php/ajahs>
- Philippines, N. L. (2019). The Sinking Bell Tower. Manila, National Capital Region.
- Tewell, J. (2019). Laoag City Sinking Bell Tower. Manila.
- Torre, V. D. (2006). The Ilocos Heritage. Makati City: Tower Book House.
- Tourist, T. C. (2019). The 15 Best Things To Do in Laoag. Retrieved from The Crazy Tourist: <https://www.thecrazytourist.com/15-best-things-laoag-philippines/>
- Warren, J. (2011, February 27). The Sinking Bell Tower by Twilight. Retrieved from Flickr: <https://www.flickr.com/photos/jameswarren/5896665662>