



The Reconstruction of Architecture in Vat Phou, Champasak District, Lao PDR

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This article is part of research titled *Reconstruction of Architecture in Vat Phou, Champasak District, Lao PDR*, which aimed to study the Khmer architecture of Vat Phou, Champasak District, Lao PDR. The tools used in the research were field surveys and interviews with art and architecture history experts. The data was analysed and compared with other architecture in a similar period to that within this study. The analysis will be presented in a three-dimensional reconstruction using diffusion theory as the guideline to study the Khmer architecture of Vat Phou, Champasak District, Lao PDR. This reconstruction will help viewers to imagine ways to preserve ancient sites that are considered valuable heritage of the nation. The research result shows that the Khmer architectural form of Vat Phou, Champasak, Lao PDR, is in line with Khmer beliefs, which were the beliefs and culture related to the deities. The temple was built as a place to pay respect to the deities and for holding religious ceremonies. The result is in line with cultural diffusion theory, which has helped provide an explanation of the interaction between two groups of people with similar cultures and where both parties accepted the cultures. It is also believed that all the cultures in the world were influenced by one majestic culture, which originated in one area. For instance, the Khmer culture, which was the mightiest culture in Southeast Asia, received its influence from a mighty civilisation with the central originating point in India. Cultural diffusion caused peoples in different areas to have the same traditions and cultures. Therefore, the architectural form of Vat Phou, Champasak, Lao PDR, is one of the temples that were built by Khmer builders with their beliefs of the deities and kings. By comparison between the architectural form of Vat Phou, Champasak, District, Lao PDR, and others that ancient Khmer people built around a similar period, it can be seen that most pieces of evidence from the architectural components such as the lintels, which are one of the essential structures of the buildings, usually



contain motifs depicting stories. Therefore, the lintels are important pieces of evidence in determining the age of ancient temples. The data from the field study shows that most lintels are from the Baphoun era overlapping into the art form during the Angkor Wat era around the 16th to 17th centuries in the Buddhist era (10th – 11th century). Other architectural forms from other eras are also present, such as during the Bakheng, Koh Ker, Banteay Srei and Khleang eras, which can be found on the decorations of the colonettes and gables, as well as the pillars along the walls. This can be explained with the architectural forms at Vat Phou, Champasak District, Lao PDR, which might have received the influence expanded from the Bakheng arts, where the forms were developed, while maintaining some identities that had been used in the Angkor Wat arts.

Key words: *Reconstruction, Architectural form, Vat Phou, Champasak, Lao PDR*

Introduction

Khmer culture, an ancient culture in Southeast Asia, belongs to the Khmer nation, a great nation with a long history of doctrine, belief and religious power and authority. There is no empirical evidence of where the Khmer originated from. However, the things that indicate the Khmer as a great nation are the “Khmer temples” (Phumisak, 2004). Khmer temples are architectural works built according to the Khmer belief, which is assumed to be influenced by India (Sumpuntharak, 1986). According to the belief, the deities reside at Mount Meru, situated in heaven and considered the center of the universe. The construction of temples within the Khmer culture was like a simulation of Mount Meru in the human world, as place for the deities to reside. There are constructions of the sculptures for the deities inside the temples. Different parts of the temples represent the parts of Mount Meru (Wongpongkham, 2003). The important components of the Khmer temples consist of Prangs, or a group of pagodas, libraries, inner gopuras or passages, reservoirs, and outer gopuras (Charernsupkul, 1998). The components of the temples depend on the type and usage of the temple. The more complete the components are, the more important and the stronger the beliefs were during that period. The belief and faith are reflected through valuable architectural works that can be found in Khmer temples in Cambodia that expanded within some parts of Thailand, Vietnam and Lao PDR.

Lao People’s Democratic Republic, or Lao PDR, is a country in Southeast Asia where historical pieces of evidence show that the area was under the influence of Khmer civilisation (Damapong, 2013). The presence of the ancient Khmer civilisation can be seen through the evidence in Champasak District, more so than in other districts. Pieces of evidence were found starting from the 12th Buddhist century (6th century). The evidence and historical surveys found that many roads were built from the center of the kingdom to different cities. There were five main roads from the capital. One of the roads cut through Lao PDR, which is the road from the capital to Vat Phou in Champasak District (Tantatsanawong et al., 2007). There are many

ancient ruins along the road, Hong Nang Sida temple, Hong Thao Tao temple, Tomo Temple, That Sam Prang Temple, That Nang Ing Temple, Khok Kran Duan Temple and Nong Nam Khai temple (Lertlum et al., 2010). Traces of Khmer civilisation have gained their importance since ancient times, since it was assumed that this area was the origin of the Kingdom of Chenla. The point of origin was in Champasak where the capital of Chenla was called “Setthapura city” before the historical development, which transformed the Kingdom of Chenla into the great Khmer kingdom around the 11th Buddhist century (5th century), especially when the city was approved as a world heritage city in terms of architecture under the influence of the Khmer kingdom in Southern Laos. It is considered to be the biggest Khmer temple in Laos. This ancient Khmer site was assumed to be the start of the establishment of the ancient Cambodian kingdom. The site was registered under UNESCO as a world heritage site in 2002 (Kirdsiri, 2005), known as Vat Phou Champasak or “Vay Phou temple” (Saraya, 1997).

Vat Phou is an ancient religious site in the Champasak district of Lao PDR and was registered as a “world heritage site” by UNESCO (Jirawattana, 1995). It is a historical tourist site situated around nine kilometres from Chapamsak and covers a wide area (Damapong, 2013). Vat Phou temple is situated on a mountain towards the west of the district. Local villagers call this mountain “Phu Klao,” which signifies their high respect towards the mountain, together with the act of putting their hands together and raising them over their heads. The front part of Vat Phou faces towards the east and runs down according to the characteristics of Khmer temples. The temple building runs from the east to the west, similar to those of Khoa Preah Vihear temple. The height of the temple is 607 metres above sea level from the floor to the top highest part (Laorsuwan, 2014). Vat Phou is a historical site that historians assume was built during the Setthapura period. The temples had influence over the whole area of the southern part of Indochina. The order for construction might have come from a king who ruled over the Kingdom of Chenla in the 11th Buddhist century (5th century), or before that. The objectives for the construction was to build a temple for the deity, Phatresuan, and establish a remembrance of the victory of the Champa kingdom. The construction of the religious site reflects the skills of the builders in the past in choosing a location that was both beautiful and appropriate. The temple consists of successive staircases from the east to the west building, which replicates Mount Meru, where Shiva resides. The front part of the temple consists of a baray, which was believed to be sacred water used for different ceremonies. The first set of architecture is a square base, which is believed to be a gopura (Jirawattana, 1995). Next to the gopura are ancient Nang Riang colonnade pillars that were put in to accompany the pathway built with sandstone. After walking past the first set of Nang Riang colonnade, two big architectural structures can be seen on the north and south side called “Hong Thao” and “Hong Nang.” It is assumed that these two buildings were used for religious ceremonies or resting areas for the King and the royal families when they came to attend ceremonies. Another interesting part of this area is the beautiful motifs on the gables and lintels, especially the “Umamahesuan.” Up the hill past the Hong Thao and Hong Nang buildings lie the stairs, the second set of Nang Riang colonnaded pillars, and a pathway. This pathway runs uphill towards



the second set of stairs connecting to the top resting balcony. The next set of stairs show traces of the “naga bridge,” which was a symbol of the rainbow bridge, or the pathway connecting between the human world and heaven, according to the Khmer belief. The top of the stairs situates the central sanctuary, which is the heart and the most important structure within this religious building (Laorsuwan, 2014).

Due to its importance, many government and private organisations see the temple’s crucial role as a valuable heritage, which has led to the renovation, maintenance and development of tourism to the site according to the National Economy and Social Development Plan. From the field visit, it was found that there is still no clear restoration plan. Even though there are many countries within the collaboration, such as Italy, Vietnam, Japan, France, Korea and India, there is still no estimation for the finish date. This study will create benefits for the historical aspect through the study of historical pieces of evidence, both from documents and field visits and surveys, as well as the interviews. The data was analysed and compared with similar architecture, such as Sambor Prei Kuk temple, which is the origin of Sambor Prei Kuk arts, Phnom Rung temple, the origin of Baphoun arts, Preah Vihear temple as the origin of Baphoun arts overlapping with Angkor Wat, and Bayon temple, which is the origin of Bayon arts. The end product will be a complete three-dimensional ancient architecture. The study of the reconstruction was only to analyse the possibilities, not to identify the facts. However, it would be a failure to seek academic information and facts without creating a reconstructed model. From the abandoned ancient site, the reconstruction will give value to this ancient structure once more.

Results from the study

According to the discovery of records and assumptions of historians, it was assumed that Vat Phou was built before the 12th Buddhist century (6th century). Vat Phou was being built during the time when Setthapura still had influence over the south of Indochina. The person who ordered the construction of the temple might have been the King of the Chenla kingdom during the 11th Buddhist century (5th century) or earlier. From the study, it was found that the evidence on the architecture of Vat Phou can be categorised into three groups. The first group is the architectural form dated before the 11th Buddhist century. This can be seen from the ancient brick Prang around the central sanctuary, which was renovated during the 15th-16th Buddhist century (9th – 10th century). Most of the art forms were Khmer art form that overlaps between Baphoun and Angkor Wat art. The last group is the group built with laterite, which is assumed to be a unique form of Bayon art around the 17th Buddhist century (11th century). Therefore, the study on the architectural form of Vat Phou, Champasak District, Lao PDR is according to the main components of Vat Phou, which consist of the central sanctuary, library, Hong Ma, Hong Thao, Hong Nang, gopuras, naga bridge and reservoirs. Examples of other temples that were constructed around the same period and with similar architecture to Vat Phou, such as Sambor Prei Kuk, the origin of Sambor Prei Kuk art, Phnom Rung temple, the origin of

Baphoun art, Preah Vihear temple, which is the overlap between Baphoun art and Angkor Wat, and Bayon temple, the origin of Bayon art, will be presented with the following detail for comparison.

Central Sanctuary

Parts of the central sanctuary already have collapsed except the base and the walls. The roofs are all collapsed. The floor plan is in crossed-shape built with sandstone, laterite and bricks sized 13.26 metres wide and 33.00 metres long.

Table 1. The comparison of the central sanctuary structure

No.	Name of ancient sites	Base	Body	Top
1.	Vat Phou Temple	The base is decorated with one-tiered lotus petal on top of the one-tiered square base built with sandstone	The building was built with enclosed sandstone and brick rectangular walls to absorb the weight.	Only parts of the roof are left. The top part collapsed. The materials used were sandstone and bricks.
2.	Sambor Prei Kuk Temple	The base is decorated with one-tiered lotus petal on top of the Paitee base on top of the square base built with bricks.	The building was built with enclosed brick walls in a square shape with indented corners to absorb the weight.	The roof consists of a multi-tiered roof. The top can no longer be seen due to collapse.
3.	Phanom Rung Temple	The base is decorated with a one-tiered lotus petal built with sandstone with no base.	The building was built with enclosed sandstone walls in a square shape with indented corners to absorb the weight.	The roof consists of a five-tiered roof in corn-con shape made from sandstone.
4.	Preah Vihear Temple	The base is decorated with two-tiered lotus petal on top of the two-tiered square base built with sandstone	The building was built with sandstone enclosed colonettes and walls in a rectangular shape to support the weight.	The roof collapsed, leaving only sandstone gables.
5.	Bayon Temple	Paitee base built on top of a square base, made from sandstone.	The building was built with enclosed walls with indented corners to support the weight.	The roof is built in a corn-cob shape with the carving of large human faces all around.

From the survey, it was found that the central sanctuary of Vat Phou is the only building on the top level of the religious site, with a rectangular shape with three entrances. The main entrance



faces east, similar to those of the Indian architecture where the Mondops faces east. For this reason, most Khmer religious sites face east according to the belief in the energy of the sun that will help power the statues. From the analysis of the structure of the central sanctuary, the base of Vat Phou temple is similar to that of Phanom Rung temple, where the building is situated on the square base and a one-tiered lotus petal base, or both. The base of this temple is the same as the base of Phanom Rung temple, with a two-tiered square base and two-tiered lotus petal base, except that the level is not the original ground level. The patterns found are all the same set, such as the lotus flower shape base, *Kampu* patterns, conch shell patterns, overturned and upturned lotus moldings, molded pedestal with budding lotus flower petals, and molded pedestal with budding lotus flowers. These patterns are found in Baphoun art all the way to the early Angkor Wat period, around mid 16th to 17th Buddhist century (10th – 11th century). The body structure of Vat Phou consists of enclosed walls, built in a u-shape with three entrances and a rectangular building with one entrance. From the comparison of the building structure, it was found to be similar to Phanom Rung Temple in both the structural form and floor plan. For the art form of the lintels around the arch entrance of the sanctuary, it was found that most lintels are from the Baphoun era, around the 16th Buddhist century (10th century), and might even overlap into the Angkor Wat era, such as the lintels on the arch entrance on the east side with the motif of Krishna killing Kaliya in the middle. This lintel is a mixture of art forms from two eras, the Baphoun and Angkor Wat eras. It can be further assumed from the art form that both the structure and the architecture are of the Baphoun era to the earlier Angkor Wat era, around the 16th and 17th Buddhist centuries (10th – 11th century). The roof is also similar to Preah Vihear temple, both in the decoration and the structure of the Mondop. From the interview with Mr. KyungHwan Baek, head of the restoration team for the Hong Nang Sida temple, Champasak District, Lao PDR, on the assumption of the missing top part, Mr. KyungHwan Baek said that the top of Vat Phou could be compared to that of Phanom Rung temple since they were built in a similar era. Additionally, a model of Preah Vihear Temple was also found, which helped with the assumption that the roof of VatPhou was similar to that of the Phanom Rung and Preah Vihear temple, which is part of the Baphoun art all the way to the Angkor Wat art era during the 16th to 17th Buddhist centuries (10th – 11th century).

From the earlier statement, it can be concluded that the architectural style of the central sanctuary can be compared to Phanom Rung temple, which is in the form of Bapoun art in the 15th Buddhist century (9th century). The structure of the building is in a rectangular shape. The Mondop had three entrances. One side of the building is connected to the Garbhagriha, which is a unique Baphoun structure. This structure can be compared to the Phanom Rung temple.



Figure 1: The current central sanctuary (left) and the reconstruction of the central sanctuary (right).

Library

The current condition of the library is almost all collapsed. The remaining parts are the base and the colonettes by the entrance. All the roofs are collapsed. The building is in a rectangular shape. It is assumed that the entrance is in the west. The structure was built with sandstone with dimensions of 6 metres wide and 8 metres long.

Table 2: The comparison of the library

No.	Name of ancient sites	Base	Body	Top
1.	Vat Phou Temple	The base is situated on a square base. The current condition of the base is unclear since it is buried underneath the ground.	The body structure of the building is collapsed. The remaining part is the solid wall on the east with a blind door in the middle.	All the roofs had collapsed.
2.	Sambor Prei Kuk Temple	-	-	-
3.	Phanom Rung Temple	The base is a two-tiered square base.	The body structure of the temple is in an almost perfect condition. The walls are enclosed with only one entrance. The building was built with laterite.	The top of the building was built with laterite. The roofs were two-tiered arched roofs. There are no naga heads or lotus moldings.
4.	Preah Vihear Temple	The base is a two-tiered square base.	The body structure of the temple is in an almost perfect condition. The	The top of the building was built with laterite. The roofs were two-tiered arched roofs.

			walls are enclosed with only one entrance. The building was built with laterite.	There are no naga heads or lotus moldings.
5.	Bayon Temple	The base is a two-tiered square base with indented corners.	Most of the body structure has collapsed except the base and some parts of the walls, built with laterite, and it has one entrance.	All the roof is collapsed.

From the survey, it was found that the library was built to house second-tier sculptures. It is assumed to have been used to keep books, religious texts or for storing materials for ceremonies. The floor plan of the library were two rectangular-shaped buildings in the north and the south of the central sanctuary. It is assumed that both buildings face the west. From the interview with Kosi Keevongphun, a lecturer from the faculty of architecture at Champasak University, the reason for the library to be on the west side of the central sanctuary might be because Vat Phou was one of the earliest buildings that were built before there were actually traditions and patterns to follow like at Pheah Vihear temple, or Angkor Wat temple, which are the temples built in the later period with all the traditions already put in place.

The base of the library is on a square base. The current condition is not conclusive. From the field visit, it was found that the east wall of the library, which is in the south of the central sanctuary, was built from sandstone with a blind door. It can be assumed that the door to the west is the entrance. The component of the body structure consists of a lintel. The field study found one lintel in the east. The lintel appears to be the lower part, displaying the story of Lord Buddha when encountering the Mara. The Mara was riding on either a horse or a dragon, swaying a weapon, and about to harm Lord Buddha. This is consistent with the Angkor Wat art in the mid 17th Buddhist Century (11th century), according to the book on lintels in Thailand (Suksawat, 1988). The lintel can be compared to the one in Pimai Temple. Two colonnettes were also found on the southern door. The colonnettes are in an octagon shape. The patterns of flowers and triangle leaves were in smaller shapes, which leaves more empty spaces. This kind of pattern is common in Baphoun art, around the 16th Buddhist century (10th century). It can be assumed that the patterns were influenced by the Koh Ker and Banteay Srei art. The roofs are all collapsed. However, it is assumed to be similar to the roofs of the libraries in other temples.

In conclusion, it can be assumed that the architecture of the library is in a rectangular shape with one entrance and three blind doors. The entrance faces the central sanctuary. This architectural form can be compared to those of Pimai or Phanom Rung temple, which were built in a similar era to Vat Phou.



Figure 2: The current condition of the library (left) and the reconstruction of the library (right).

Hong Ma

Some parts of the structure have already collapsed. The only remaining parts were the base and the body structure. The roofs are all collapsed. The building was in a rectangular shape built by sandstone and laterites; 5.24 metres wide and 25.60 metres long.

Table 3: Comparing the structure of Hong Ma.

No.	Name of ancient sites	Base	Body	Top
1.	Vat Phou Temple	The base has the pattern of lotus petals, situated in the two-tiered square base, built by sandstone.	The body is an enclosed structure with the wall supporting the weight. The walls are a rectangular shape built with sandstone.	The roofs are all collapsed.
2.	Sambor Prei Kuk Temple	-	-	-
3.	Phanom Rung Temple	-	-	-
4.	Preah Vihear Temple	The base has the pattern of lotus petals, situated in the two-tiered square base, built by sandstone.	The body is an enclosed structure with the wall supporting the weight. The walls are a rectangular shape built with sandstone.	The roof is a two-tiered roof built with sandstone.
5.	Bayon Temple	-	-	-

From the survey of Hong Ma, the structure is a rectangular shape. The building is not part of the Khmer temple. It is assumed that these two buildings were built to store the materials used for ceremonies, or for keeping the King's vehicle. From the comparison of the structure of Hong Ma, it can be concluded that the base Hong Ma in Vat Phou is a lotus petal base built on

the two-tiered square base. The body structure of the building is built with enclosed walls to support the weight, built in a rectangular shape. The walls are built with sandstone and also in a rectangular shape. No patterns were found on the walls except the window frames that were decorated with Luk Ma Huad stone bar. Considering other materials found in the Hong Ma, the base and the body structure of the Hong Ma is similar to those of other Khmer temples. For the materials of sandstone and laterite, the art form is assumed to be around the 16th to 17th Buddhist century (10th – 11th century), which means it can be assumed that Hong Ma might be a structure built along the path between different Khmer religious sites.

From the findings above, the architecture of Hong Ma can be compared to the smaller buildings built for storing materials used in religious ceremonies. The building might be aimed for additional usage rather than being one of the main buildings. Therefore, the reconstruction of Hong Ma is similar to that of the library, or smaller buildings, as a secondary building within the temple complex.



Figure 3: The current condition of Hong Ma (left) and the reconstruction of Hong Ma (right)

Hong Nang and Hong Thao

Part of the Hong Nang building has already collapsed, leaving only the base and the body. Most of the roofs have already collapsed. The walls are in a rectangular shape, built with sandstone, laterite and bricks with dimensions of 43.10 metres wide and 63.90 metres long.

Part of the Hong Nang building has already collapsed, leaving only the base and the body. Most of the roofs are already collapsed. The walls are in a rectangular shape, built with sandstone, laterite and bricks with dimensions of 43.05 metres wide and 63.70 metres long.



Figure 4: Hong Nang from the front (left) and Hong Thao from the front (right)

Table 4: Comparing the structure of Hong Nang and Hong Thao

No.	Name of ancient sites	Base	Body	Top
1.	Vat Phou Temple	The base is a lotus petal base built on a square base. The number of tiers for the base is invisible. The base was made with sandstone and laterite.	The body is an enclosed structure with the wall supporting the weight. The walls are a rectangular shape built with sandstone and bricks.	The top consists of a two-tiered roof, built with sandstone.
2.	Sambor Prei Kuk Temple	-	-	-
3.	Phanom Rung Temple	The base is a lotus petal base built on a square base. The number of tiers for the base is invisible. The base was made with sandstone	The body is enclosed structure with the wall supporting the weight. The walls are a rectangular shape built with laterite.	The roofs are all collapsed.
4.	Preah Vihear Temple	-	-	-
5.	Bayon Temple	-	-	-

From the survey, it was found that the Hong Nang and Hong Thao of Vat Phou are rectangular shapes, built with laterite, sandstone and some bricks. From the interview with Amphun Saengprachun, the deputy director of the World Heritage Site of Vat Phou stated that the floor plan of the building is in a “u” shape with a narrow pathway inside. It is assumed that the pathway connects with the Hong Ma of Sala. The building on the left was called Hong Nang. It is assumed that Hong Nang was used by women to change their clothes while the building on the right, which is called Hong Thao, was used for men to change their clothes. There are beautiful carvings on the arch of the door. From the comparison of the base, it was found that the base is similar to the base of Phanom Rung and Phra Vihear temples. The buildings are

situated on square bases with the carving of lotus petals. The art form is from the Baphoun and the Angkor Wat eras. The body of the building was an enclosed rectangular shape. There were windows to help with the airflow. From the comparison of the components of the body structure, there was a lintel on the gable of the entrance. The carving on the lintel is of a person in the Maharajleelasana holding a lotus flower on top of the Kala that is sticking out its triangle tongue while releasing a garland from its mouth and holding the garland with its hands. This form of lintels is from the Baphoun era around the mid 16th Buddhist century. The colonnettes of the door of the Hong Nang building is in an octagon shape. The patterns were protruding lines with empty spaces in between. The patterns suggest the influence of Preah Ko and Bakheng art, but not Bayon art. It can be assumed that the patterns were Bakheng arts that received the influence of Preah Ko art during the 14th Buddhist century (8th century). The colonnettes on the walls next to the entrance contain the patterns called Kam Pu, with the Kankhot patterns hanging down from both sides, connected with the Kan To Dok pattern, which is consistent with the Khleang art, around the 15th Buddhist century (9th century). As for the roof, the only remaining part is the gable. It can be assumed that the roof of the Hong Thao is similar to that of Hong Nang since the structures in the body part are similar. This fact is also in line with many academics who have been calling these two structures twin buildings, since most of the structures and components are very similar.



Figure 5: The reconstruction of Hong Nang (left) and the reconstruction of Hong Thao (right)

Gopura

Most of the structure of the Gopura has collapsed except for the base. The floor plan for the Gopura is in a cross shape, built with laterite with dimensions of 8.54 metres wide and 134.96 metres long.

From the survey, it was found that the Gopura of Vat Phou, Champasak province, Lao PDR, is almost all collapsed. The only parts that remain are the lotus petal base on the square base in a cross shape. The materials are sandstone and laterite. From the field study, parts of the sandstone with patterns were found at the site. It is assumed that these were parts of the lintels of the Gopura in the Baphoun era. There could be two following assumptions: this Gopura was an enclosed building that was similar to most Gopuras, or this Gopura could have just been a

tabernacle. However, considering the remains of the base, which revealed four doors in each direction, it can be assumed that this Gopura was built as an arch entrance to the religious site. Perhaps due to insufficient amounts of manpower and food, this Gopura might not have been completed.

The earlier statement can be concluded that the architectural structure of the Gopura can be compared to those of the Phimai and Phanom Rung temple, around the 15th to 16th Buddhist century (9th – 10th century).



Figure 6: The Gopura (left) and the reconstruction of the Gopura (right)

Naga Bridge

Currently, some parts of the Naga Bridge are collapsed. The parts that still remain are some parts of the body and the base. The bridge is in a square shape and consists of only one set of stairs, built with sandstone with dimensions of 9.21 metres wide and 14.99 metres long.

Table 6: Comparing the structure of the Naga Bridge

No.	Name of ancient sites	Structure
1.	Vat Phou Temple	Collapsed
2.	Sambor Prei Kuk Temple	-
3.	Phanom Rung Temple	The nagas were spreading the hoods. Each head has decorative items.
4.	Preah Vihear Temple	Naga ground, or Naga Bridge, is in the southern part. The floor is lined with flat stones. The base is slightly raised from the ground with two seven-headed Nagas on top, spreading the hoods and facing the north. The body of the Nagas lies towards the south with the tail-end lightly raised. This type of Nagas is considered Baphoun art.
5.	Bayon Temple	The nagas were spreading the hoods. Each head has decorative items.

From the survey, it was found that the Naga Bridge symbolises a pathway between earth and heaven. According to the Hindu belief about the universe, this bridge connects humans and the gods. Therefore, there are nagas' heads at the beginning of the bridge. In some temples, there might be nagas in all the four directions, in two directions, or in only one direction. The number of heads depend on the context of the area. From the comparison between the Naga Bridge of Vat Phou and those in other temples, it was found that the nagas all spread their hoods, and each head has decorative items on them. This is the characteristic of the nagas during the Angkor Wat era in the 17th century (11th century), which is similar to those of Phanom Rung and Phimai temples. However, the nagas in Preah Vihear temple are bald.



Figure 7: The Naga Bridge (left) and the reconstruction of the Naga Bridge (right)

Reservoirs

Some traces of the reservoirs are still visible. The reservoirs are in big rectangular shapes, situated in both the north and the south, with one set of colonnettes. The materials are no longer visible, but the reservoir ground can still be seen when comparing with the reservoirs according to the ancient Khmer belief. The dimension of the reservoir is 92.00 metres wide and 276.00 metres long.

Table 7: Comparing the structure of the reservoirs

No.	Name of ancient sites	Structure
1.	Vat Phou Temple	Rectangular shape
2.	Sambor Prei Kuk Temple	-
3.	Phanom Rung Temple	Square shape
4.	Preah Vihear Temple	-
5.	Bayon Temple	-

The survey shows that there are slight differences between the reservoirs in each Khmer temple. The reservoirs are only different in size, for instance, the size of the reservoirs between Phnom Rung Temple and Phimai Temple.



Figure 8: The reservoirs (left) and the reconstruction of the reservoir (right)

Discussion of the Analysis

Khmer architecture is a form of architecture that was constructed according to the Khmer belief that had existed since ancient times. The Khmer kingdom was one of the most powerful kingdoms in Southeast Asia. It is assumed that the Khmer kingdom received influence and culture from India. In the old belief, temples were built to house the religious statues. The buildings were built with multiple-tiered roofs, and on each of the levels were decorated with the small towers. For example, the construction of temples with high arched roofs is assumed to be influenced by northern India and was called “Shikara”, while the southern part of India called them “tower sanctuary”. Therefore, the construction of the Khmer temples in the earlier period is assumed to have received the influence first from northern India and later on from southern India. Later still, Khmer builders merged the two cultures together and created their own form, which led to the unique characters that integrate the culture with certain beliefs and ideologies together.

Culture emerges from the interactions that have been carried down. Culture changes according to the conditions and time. When new items or methods that can be used to solve the problems and better address the needs of the society are discovered, old culture might become obsolete. Therefore, in order to preserve or maintain the traditional culture, the culture needs to be changed or improved to be more appropriate to each time period (Thepkampanat, 2008). Amara Pongsapich (1990) mentions the culture diffusion theory by G. Elliot Smith, who talked about the concept that the cultural centre started in Egypt around six thousand years ago. Before that, people did not get together. There was no central point, and people were living scattered. After people became more creative and started to use tools, such as clay pots or baskets, culture started to spread out. The theory suggests that there is only one core to cultures, and the diffusion of culture is the reason why people who are living in different areas can have a similar culture. Social changes mostly happened from the spreading of culture from outside rather than



the discovery of new innovations. Innovations were mostly the mixture of things from outside and things that already existed, which led to the creation of things that had not existed before. The spreading of one culture to another culture happened under the principle that culture is the ideas and behaviours of individuals. When those individuals arrived at a certain destination, their culture arrived there with them. The spreading of culture also depends on behaviours. Cultural diffusion can also be considered based on geography, by basing on the physical units, the development of human beings, the weather, the history, the language, and so on (Pichitkul et al. (1988).

The diffusion of culture is an interaction between two groups of people with different cultures but accepting each other's culture. Every culture developed from one origin in Egypt (Amara Pongsapich, 1990). Silimilarly to the cultural diffusion thought of G. Elliot Smith on the belief that every culture in the world is influenced by the great culture of the same origin. Such as the Khmer culture, the greatest culture in Southeast Asia, which was influenced by the great culture of India. Cultural diffusion caused people who are living in different places to have similar traditions and cultures. Therefore, the architecture of Vat Phou, Champasak province, Lao PDR., is one of the Khmer temples that was built by Khmer builders and the coinciding belief and faith towards the gods and kings. When comparing the Khmer temple of Vat Phou in Champasak province, Lao PDR, and other Khmer temples built in a similar period, the evidence that was found, such as the lintels, an important component of the architecture that contain carvings and patterns, is one of the crucial pieces of evidence in determining the age of the religious sites. The field study revealed that most lintels are from the Baphoun to the Angkor Wat period, around the 16th to 17th Buddhist century (10th – 11th century). Some parts of the architecture, such as the colonnettes by the entrance, the gables, or the colonnettes along the walls, are from the Bakheng, Koh Ker, Banteay Srei and Khleang periods. This could be explained as that the architecture in Vat Phou, Champasak province, Lao PDR, received the influence from the Bakheng period. Afterward, the form of architecture was developed and integrated with the characteristics of other cultures all the way to the Angkor Wat period. This is in line with the research by Sheewasukthaworn (2013), who conducted the study on “The Reconstruction of the Architecture of Arogayasala Chapels” during King Jayavarman VII's period. The study was conducted on Prasat Ku-Santararat, in Maha Sarakham province. The result from that study shows that the architectural design of the Arogayasala Chapels consists of standard components, the positions of the statues based on the Mahayana Buddhism belief. From the analysis of the architecture, it was found that the central sanctuary, the library and the Gopura still maintain the unique Khmer architecture, which was influenced by the architecture in India, and later developed into their own unique form. The builders intended to build the buildings to house sacred objects. This architecture, therefore, functions as places to heal people's minds and be free from the circle of life. They can also help strengthen the minds of people who are fighting against some diseases.



The uniqueness and the forms that were created from the love and faith for the gods helped bring together outsiders' culture and to be developed into their own, and made Khmer civilisation the most powerful civilisation in Southeast Asia. The forms of cultural diffusion have the following important characteristics (Amara Pongsapich, 1990):

1. The diffusion from one place to another while the culture in the origin place is still powerful and spreads its power in other places.
2. The kind of diffusion where a group of people within a culture moved to settle in a new location.
3. The diffusion through classes when the culture of the higher class people diffuse to the lower class people.
4. The diffusion through an individual where an individual brought with them their culture and diffused it to another individual.
5. The diffusion through stimulus where the culture was diffused through something or by using some ideology as the tool.

From the above information, it could be concluded that cultural diffusion theory is a form of social development with the exchanges of each others' cultures. In the case where one culture interacts with another culture with less influence, the possibility is that people will tend to accept the culture with the stronger influence. It was also found that mostly the culture with less influence would eventually become part of the culture with stronger influence. Similar to the Khmer culture that accepts the culture of worshipping the gods of the Indians and later on, adjusted that to their own culture. The cultural diffusion theory can provide the explanation that the architecture that exists in Vat Phou Temple, Champasak Province, Lao PDR, is similar to the belief and culture that related to the worshipping of the gods. This can be seen in the construction of the temples to worship the gods and be used as a religious site to perform religious ceremonies.

Conclusion

Vat Phou, Champasak Province, Lao PDR., is an important religious site in Lao PDR. It is assumed to have been built around the 11th Buddhist century (5th century) for the purpose of performing religious ceremonies. The architecture of Vat Phou Temple, Champasak Province, Lao PDR, is consistent with the Khmer belief and culture related to the gods, which was to build temples to worship the gods and perform religious ceremonies. For the architectural aspect, the main component of the religious complex consists of the "central sanctuary," which is situated on the highest point. The building is in a rectangular shape. The main entrance faces



the east. The Mondop consists of three entrances, with one of the entrances connected to the Garbhagriha. The walls were built in Baphoun style around the 15th Buddhist century (9th century). The library is situated in the north and south of the central sanctuary. The library was built in a rectangular shape with closed-in walls and only one entrance. It is assumed to have been used for storing materials that were used in ceremonies. Hong Ma buildings are situated on both sides of the second set of colonnettes, to the south and north of the religious site. Hong Ma is a rectangular shaped building with two entrances in the north and south. The buildings are built on the route the King took to come to the site. It is assumed that these buildings were built to store the vehicles of the Kings or for storing the materials used in ceremonies. “Hong Thao” and “Hong Nang” buildings are two big buildings situated in the north and south. It is assumed that these two buildings were either used for ceremonies or as the resting areas for the Kings. The architectural form is similar to a long gallery. The walls of the building are in a rectangular shape built with bricks, sandstone and laterite. The Gopura is situated in the front part of the site, built in a cross-shape with sandstone and laterite. It is assumed that it was built as the entrance to the site and led to the “Naga Bridge.” According to the Khmer belief, the bridge is assumed to symbolise a rainbow bridge, or a pathway between earth heaven. The bridge was built in a rectangular shape. The naga heads on the bridge are spreading their hoods. Each head has decorative items, which shows the characteristics of the Angkor Wat art. The reservoirs are big rectangular shapes situated in the north and south, next to the first set of colonnettes. It is assumed that the reservoirs were built to store water for consumption and use during religious ceremonies.

The reconstruction of Vat Phou Temple, Champasak Province, Lao PDR is a study of the demarcation from the field study. The data was analysed and compared with the architecture built in a similar era. Most of the comparisons are made with Phanom Rung Temple, Preah Vihear Temple and Bayon Temple, which were the models for the architecture of BaPhoun and Angkor Wat and Bayon art, around the 15th to 17th Buddhist century (9th – 11th century). The data were then analysed and thoroughly cross-checked, with the addition of imaginings based on possibility and the data presented in a reconstructed form, which aimed to be as accurate as possible.



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Interviews

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