

## **The Evolutionary Development of Temples from Early Style to Later Style (Myanmar Style) In Bagan Period**

Sanda Linn\*

Department of Archaeology, University of Yangon

### **Abstract**

Bagan is a region which is teeming with many ancient buildings, and historical and cultural heritages of Myanmar. Out of the religious buildings, cetis and temples form the greatest number. Just as the temples in Bagan differ in size, so also they differ in their architectural works. As much as the temples in Bagan are many and varied, their plans and shapes are different. The styles of the Bagan temples during the Early, Middle and Late Bagan periods are different. Through the study of the evolution of temples in Early, Middle and Late Bagan periods, the high architectural standard of ancient Myanmar architects, can be known.

**Keywords:** Bagan, cetis, cultural heritage

### **I. Introduction**

The current area within the city-wall of Bagan, generally, covers six square miles. A total of over 3000 ancient buildings are found in the environs of Bagan which occupies about over twenty square miles. According to the inventory, there are 1745 stupas, 431 brick monasteries, 54 caves and ordination halls, and 892 ancient brick mounds in Bagan, bringing the total number of religious structures to 3122. Old Bagan does not have any remnants of houses but a large number of pagodas, stupas temples and monasteries both intact and in ruin. Therefore, it can be assumed that the people of Bagan used to build their houses of perishable wood, bamboo, etc, not of bricks. Another reason is that, due to peerless devotion of the Myanmar to the Triple Gem, they used to construct the buildings related to the Triple Gem of brick and stone grandly. The religious buildings constructed in Bagan are stupas, temples, monasteries, theins (ordination halls or sima), Tipiṭaka libraries, rock-cut caves, image houses, etc.

The ancient buildings in Bagan are the ones constructed based on Buddhism which flourished there in the 11<sup>th</sup> century AD. It is written traditionally that Buddhism reached Myanmar from India and developed in its central part including Bagan region and that Bagan architecture also reached Myanmar from India. However, through the study of ancient buildings in India, it is seen that the vaults and structures of ancient Indian brick buildings are not as lofty and grand as those of Bagan. Although there are stone buildings, they use many stone lintels for great resistance to overlying weight, structures, vents and formation of interior rooms. Therefore, they do not have arches which were used in a great number in Bagan Period. As the Bu phaya Pagoda and the Ngakwenadaung built in Early Bagan Period are similar to the Sanchi Stupa in India, it can be said that Bagan architecture and construction technology underwent some influence of Indian culture in connection with the religion. However, during the period between 11<sup>th</sup> and the 13<sup>th</sup> century AD when Bagan architecture and decorative scrolls and relief works flourished to their maximum extent, appearance of Myanmar scripts and construction of high and massive temples which get much light and temples in Myanmar style are the works created in Myanmar traditional style and manner. It might be that although the fundamental knowledge of Buddhist art spread to Bagan from Mon region and India where the Buddha was enlightened, the architecture of

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\* Sanda Linn, Department of Archaeology, University of Yangon

Bagan which is applied to constructing Bagan religious edifices evolved in Bagan in its own way with the flourishing of Theravāda Buddhism.

## II. The Evolution of Bagan Temples

The word 'Gu' is derived from the *Pāli* word 'Guha' meaning 'natural cave in rocky mountains'.<sup>1</sup> 'Gu' is also called 'temple'. The word 'temple' is derived from a Latin word meaning 'sacred place'. It seems that it refers to the shrine built for Greek and Roman gods.<sup>2</sup> The Buddhist caves in India are located on the side of the mountains or underground. However, the Pyus of Sri Ksetra built the models of caves above the ground. The people of Bagan copied the tradition of Sri Ksetra in building caves.<sup>3</sup> The temples like stupas, tapers towards the top. Whatever types a temple belongs to; its square-tower (*sikhāra*) must be topped with a spire. If the structure of a temple is studied, it will be found that the base serves as an abutment to bear the overlying weight over which come the plinth with sea-bean shaped-erecting stucco ornamentations, over which again come, curvilinear roofs, lower projected recesses, upper projections, lower cornices with upheaving hands (or) kalasa-profiled base. Some temples have the bases in the form of throne with recesses. Buddha images and other religious paintings and sculptures are kept in the temples. The people of Bagan used to build more temples with four entrances than the temples with only one entrance. Such type of temples is called 'Lemyat Hnar Phaya' (Temple with four entrances). They are constructed to commemorate the Four Buddhas who have been enlightened in this world. Each Buddha image is kept on each face of the temple. In the Lemyat Hnar Phaya in Sri Ksetra<sup>4</sup>, the central pillar is connected with the encircling walls by tunnel vaults so that the encircling corridor can be formed. Looking at the Ananda Temple of Bagan which consists of works of the high standard, erected out of good inspirations from the architectural point of view, its size and lighting system is quite different from that of the Lemyat Hnar Phaya. However, it is found that its structural system is based on that of the Lemyat Hnar Phaya. It can be assumed that the Lemyat Hnar Phaya of Sri Ksetra is the proto-type of the temples with four entrances all over Myanmar. Many of the temples with four entrances are not found in India. The partly ruined plan of a temple with four entrances is found at the Temple of Paharpur in Bengal State of India. However, as it belongs to the 7<sup>th</sup> or 8<sup>th</sup> century AD and is much later than the Lemyat Hnar Phaya of Sri Ksetra, it can be considered that the temples with four entrances were initiated in Sri Ksetra of Myanmar.

It is clear that the architectural works which emerged during Bagan Period extending from the 10<sup>th</sup> to 14<sup>th</sup> centuries AD made much progress in terms of the construction technology and architectural designs, based on the temples which emerged in Sri Ksetra between the 4<sup>th</sup> and 8<sup>th</sup> centuries AD. After the 10<sup>th</sup> century AD, temples of various sizes ranging from small ones to colossal ones could be constructed in Bagan. Therefore, the Tawa Gu called 'Be Be'<sup>5</sup> and the Le wa Gu called 'Lemyat Hnar' of Sri Ksetra built by the Pyus

<sup>1</sup> Dr Than Tun *acwfa[mif;jrefrm&mZ0if (The Old Myanmar Chronicle)* Yangon, Inwa press, 3<sup>rd</sup> edition, 2002, p. 254 (Hereafter cited as Dr Than Tun, *Old Chronicle*)

<sup>2</sup> Dr Kyaw Latt, *AdokumESifhtEkynmordkif;ESifhtawG;tac:(History and Theory of Art & Architecture)*, Yangon, Yaung Sin Press, 1<sup>st</sup> Edition, February 2005, p. 231 (Hereafter cited as Dr Kyaw Latt, *History & Theory*)

<sup>3</sup> Bomhu Ba Shin, "yk\*HacwfAdokumESifhtEkynmrsm;ay:aygufwdk;wufajymif;vJvmyHk" ("The Development of the Art and Architecture of Bagan Period"), *Journal of Literary and Social science*, 1969, p.50,63 (Hereafter cited as Bomhu Ba Shin, "Development of Art and Architecture")

<sup>4</sup> See Fig-1

<sup>5</sup> See Fig-2

who established a civilization in Myanmar between the 4<sup>th</sup> and 8<sup>th</sup> centuries AD might be the proto-type of Bagan architecture. The temples of Bagan were, generally, constructed more grandly based not only on the plans but also on brick-bond, vaulting and connection of arches of the temples of Sri Ksetra. Lofty and magnificent temples like the Ananda, the Thabyinnyu, the Htilominlo, etc could be built out of good aspirations based on the construction technology which developed gradually from the Be Be Gu of Sri Ksetra etc and human innovative skill. Therefore, looking from the architectural point of view, the construction technology and the architectural works which emerged in Sri Ksetra which flourished between the 4<sup>th</sup> and 8<sup>th</sup> centuries AD are assumed to continue thriving in Bagan after the 10<sup>th</sup> century AD.

As much as the temples in Bagan are many and varied, their plans and shapes are different. The architectural works of the temples built throughout Bagan Period can, generally, be classified as the Early Bagan (Mon) Style Works, the Middle Bagan (Mon-cum-Myanmar) Style Works and the Late Bagan (Myanmar) Style Works.<sup>6</sup> They are as follows:

(1) The Temples of the Early Bagan Period (Mon Works)	Before and during the 11 <sup>th</sup> century AD
(2) The Temples of the Middle Bagan Period (Mon-cum-Myanmar Works)	During the 12 <sup>th</sup> century AD
(3) The Temples of the Late Bagan Period (Myanmar Works)	During the 13 <sup>th</sup> century AD

The styles of the Bagan temples during the Early, Middle and Late Bagan Periods are different.

**(1) The temples of the early Bagan period (Mon works)**

The temples belonging to the Early Bagan Period are not high. The terraces are made low. The Early Bagan Period temples are one-storeyed ones and seem serene. So they assume the sense of repose. If the length of the base of the temple is compared with its height, it will be found that it seems dwarfish and low. Even the crokets, dadoes and decorative erecting floral works do not assume great height. They do not seem spiky. In general, the whole temple does not take on loftiness but dwarfness.

In the light of the plan of the Early Bagan Period temples, the vestibule of the temples has only one entrance which leads into the main body. Inside the inner encircling passage and the central pillar is the shrine hall. The main body is covered with the curvilinear roof. The terraces are surmounted by the square tower and the spire. The earliest surviving temple with inner shrine in Bagan was Pahto-Tha-Mya, from the late 10<sup>th</sup> century. The idea to have a separate inner shrine may arise from the desire to pray in a dim space or may be influenced from the Indian temples.<sup>7</sup> One prototype of Bagan temples was with one pillar in the shrine as the load bearing element for the Sikhara, this has changed or improved into another design with inner shrine, the walls of the inner shrine substitute the load bearing function of the

<sup>6</sup> U Myo Nyunt, *yk \*HapwDykcdk; rsm; \AdokumESifhtEkvuf&m (Architectural and Artistic Works of Bagan Pagodas and Temples)*, Yangon, Yaung Sin Press, 1<sup>st</sup> Edition, December 1999, p.32 (Hereafter cited as U MyoNyunt, *Architectural Works of Bagan Temples*)

<sup>7</sup> Dr Kyaw Latt, *Art and Architecture of Bagan and Historical Background*, Yangon, Mudon Sarpay, 2010, p. 65(Hereafter cited as Dr Kyaw Latt, *Art and Architecture of Bagan*)

pillar. This temple has a round Sikhara, rounded Sikhara supports that the temple was pre-Kyansittha period (AD 1086). The square Sikhara, tapering to the top like the Sikhara from Ananda were introduced only after Kyansittha period.<sup>8</sup>

The bricks used in Early Bagan Period temples are of large size and the plinth is massive and large. The floor of the temple is not too higher than the ground level, sometimes even the former slightly lower than the latter. It is not a floor made on the pedestal. The doors and windows into the porches are decorated with vousoired arches. In most cases, the plinths of the Early Bagan Period temples are in the form of Kalasa pots.<sup>9</sup> The example temple with this design feature is Pahto-Tha-Mya temple. The plinth has characteristic Early Period mouldings with the rounded kalasa pot in profile and tightly banded line mouldings defined at right angles to each other whose full relief form contrasts with the temple base.

After the inner shrine temples were constructed, one important requirement was to provide lighting for the inner shrines; the inner shrines should be dim but not dark and there should be enough see the light the images or to move around in the shrine.<sup>10</sup> This problem was solved with the light-wells as in the Pahto-Tha-Mya, Abe-Yadana and Ananda temples. In Pahto-Tha-Mya temple, the light-well was installed to provide better lighting and the position of the light-well was adjusted with Buddha image for the morning sun angle.<sup>11</sup> The Abe-Yadana temple has inner shrine, and quite dim in the shrine. Therefore some scholars identify this temple to be “early type” or “Mon type”, implying that the early period of Bagan was the 11<sup>th</sup> century.<sup>12</sup> This temple was designed to have the light in the inner shrine through the light-wells from the roof like Pahto-Tha-Mya. In the shrine of Ananda temple, one sees mainly the image, which receives daylight from the ceiling’s light-well.<sup>13</sup> In order to provide daylight, sight windows were designed at both sides of the corridor, therefore the effect is the change of dark and bright areas along the passage.<sup>14</sup> Passing through the vestibule, one receives the changing atmosphere of dim and bright areas for three times and enters the dim inner shrine.

If the exterior architectural proportions of the Early Bagan Period temples are reviewed, it will be found that the height of their main bodies is about one third of their length. The ratio of the length of their main bodies and the height of the temple above the main bodies is 1 to 0.8. Therefore, it is seen that the ratio of the length and total height of the main body is 1 to 1. Basically, as they are constructed based on horizontal architectural works, they assume the dwarf form.<sup>15</sup>

In brief, the lighting system of Early Pagan Period temples allows only dim light into the encircling corridor but cause darkness in the shrine rooms. They use perforated windows. But they have secret apertures which shed light exclusively over the Buddha images inside the temples. They are made deliberately to ensure that the inner parts which are further from the entrance are darker. Thus the temple can generate an atmosphere which is conducive to serenity and concentration of mind. Light is allowed either into the temples through the axial niches of the pennant in the square tower or over the Buddha images in the shrine rooms

<sup>8</sup> Ibid, p. 117

<sup>9</sup> Minbu Aung Kyaing, *Architectural works of Bagan Period*, p. 67

<sup>10</sup> Dr Kyaw Latt, *Art and Architecture of Bagan*, p. 65

<sup>11</sup> See Fig-3

<sup>12</sup> Dr Kyaw Latt, *Art and Architecture of Bagan*, p.158

<sup>13</sup> Ibid, p.126, See Fig-4

<sup>14</sup> See Fig-5

<sup>15</sup> U Soe Soe Lin, “Pagodas and Temples of Bagan Period”, p. 214

Interview with U Soe Soe Lin, 27<sup>th</sup> April 2013

through one aperture or three apertures in the upper terraces.<sup>16</sup> Therefore, it is found that the architects of the Early Bagan Period built temples not only with artistic architectural works but also to arouse devotion to them. So it can be induced that the architects had good inspirations. Generally, the distinctions of the Early Bagan Period temples called Mon temples are getting no sufficient light, being one-storeyed buildings with curvilinear roof and of medium size, not being very high, etc.

## (2) The temples of the middle Bagan period

On the evidence of the architectural works of the Middle Bagan Period and changing architectural works, the works of the Middle Bagan Period are called 'Revolutionary architectural works'. In addition, they are also called Mon-cum-Myanmar work. A remarkably changed architectural feature of the Middle Bagan Period is that the temples get a considerable amount of light. A condition is created to shed sufficient light over the spiral corridor. The shrine hall is no longer kept exclusively. As the wall between the shrine hall and the spiral corridor is removed, the whole main body becomes the shrine hall getting much light and air. The temple is built on the raised platform. Consequently, the temples take on the lofty form. Especially, as the main body is surmounted by upper storeys, they assume great height and grandeur.<sup>17</sup>

Gubyauk-Gyi temple, a large two-storey temple with inner shrine, it is built at the beginning of 12<sup>th</sup> century. From design and construction aspects this temple is similar to Pahto-Tha-Mya or Naga-Yon temples. It has one light-well from the roof<sup>18</sup>, adjusted to give daylight to the image; the inclination angle is 60°, steeper than in Pahto-Tha-Mya, therefore not adjusted with sun angle at down hours but with the hours of day.<sup>19</sup> It also has the different designs of perforated stone windows.<sup>20</sup> The next middle period temple is Thatbyinnyu temple.<sup>21</sup> It is one of the earliest double-storeyed temples. The Thatbyinnyu temple is a transitional temple, standing between the early style of the Ananda and the late style of the Gawdawpalin temple. The great height of the temple and the vertical lines of the ornamental features—the plain pilasters, the flame-like arch pediments the corner stupas—give a soaring effect to the Thatbyinnyu.<sup>22</sup> Building temples with large solid cores started already in or before Anawrahta period of early 11<sup>th</sup> century, east and west Phet-Leik, Myi-Pya-Gu and some others. Those in the 11<sup>th</sup> century were only single storey structures, which were even difficult to define as temples; these were probably stupas with covered passages around base for people to study Jataka stories. Connected with this Thatbyinnyu, it seems that the technicians of Bagan learned the structural advantage of having broad solid core from those of early examples and applied now to build high multi-storeyed temples. There were a few two-storeyed temples like Pahto-Tha-Mya, built before Thatbyinnyu, and however this temple can be called a two-storeyed by name, constructed without support from ground floor and with 4 small upper shrines at the corners of upper storey. Based on these, this masterpiece temple Thatbyinnyu was the first multi-storeyed temple properly designed comprehensively from architectural and structural engineering aspects.<sup>23</sup> Nan-Hpaya temple,

<sup>16</sup> Dr Kyaw Latt, *History & Theory*, pp. 236,237

<sup>17</sup> Dr Than Tun, *Myanma Design*, p. 194

<sup>18</sup> See Fig-6

<sup>19</sup> Dr Kyaw Latt, *Art and Architecture of Bagan*, p. 163

<sup>20</sup> See Fig-7

<sup>21</sup> See Fig-8

<sup>22</sup> *Glimpses of Glorious Bagan* Universities Historical Research Centre, 3<sup>rd</sup> edition, February 2005, pp. 21,22

<sup>23</sup> Dr Kyaw Latt, *Art and Architecture of Bagan*, p. 132

medium size single storey, it is constructed at the end of 12<sup>th</sup> century. Concerning the architecture of Nan-Hpaya temple, the way the shrine was constructed, with four columns instead of walls, there is not a single temple applying this idea. The idea of using columns became popular or became the usual practice at the end of 11<sup>th</sup> century, as seen at Ananda in the vestibules. However no other builder in the 11<sup>th</sup> century and up to the end of 12<sup>th</sup> century thought of constructing the main shrine with columns and to have the advantage of bright and well ventilated shrines; and this Nan-Hpaya is the only temple with this system. Because the shrine receives direct daylight from the ground level windows,<sup>24</sup> it is bright and breezy already, however the inner space was additionally lighted with light-wells from the roof. Therefore this is a temple applying all good design features developed in the 11<sup>th</sup> century; the separate inner shrine, the columns and the light wells from roof.<sup>25</sup>

It is found that, during this period, the temples of Bagan underwent two changes. The first change is that although the temples continue to use perforated windows, an arrangement is made to allow sufficient light into them. The second change is that the temples are constructed on the raised platforms. Some have upper storeys. The spiral corridors are removed so that the shrine hall can get sufficient light. Porches into the main body are built on three sides. Perforated windows are no longer used. The perforated screens are removed from the windows.<sup>26</sup> In constructing the plan, the shrine hall is no longer built in the area of the central pillar. Instead, one side of the central pillar is opened, thus providing a much larger space for worshipping Buddha images. Lateral porches and windows without perforated screens are built in order that people can enter the shrine hall and vestibules easily and they can get much light and air. These temples can be said to be the proto-types of the Late Bagan Period architectural works.

In the one-storeyed temples of the Middle Bagan Period called 'Transitional Period', the height of the main body is about the half of the length. The part above the main body is equal to its length. The ratio of the length and height of the main body is 1 to 1.5. So it is found that more priority is given to increasing the height as compared to its length. In building two-storeyed temples, the upper storeyed is built over the proportionate main body which is about the one third of its total height. Thus they take on loftiness and grandeur.

If the Mon-cum-Myanmar edifices built during this period are reviewed, it will be found that although they are the same as the temples of the Early Bagan Period in shedding light over the Buddha images inside and having curvilinear roofs, they have porches which permit sufficient light into the inner encircling passages and a series of flights of spiral staircases which lead to upper storeys. Instead of perforated windows, windows without the perforated screens and the window with window-leaves come to be used.<sup>27</sup>

In brief, the general characteristics of the temples built in the Middle Bagan Period are having more storeys, evolution from draftiness to loftiness, using two-sided vaults apart from lean-vaults, allowing more light through porches or windows made on the walls of shrine halls, etc.

<sup>24</sup> See Fig-9

<sup>25</sup> Dr Kyaw Latt, *Art and Architecture of Bagan*, pp. 156, 157

<sup>26</sup> Bomhu Ba Shin, "Development of Art and Architecture of Bagan Period", pp. 54,55

See Fig-11

<sup>27</sup> U Myo Nyunt, *Architectural Works of Bagan Temple*, p. 34

### (3) The temples of the late Bagan period (Myanmar style)

When it came to the Late Bagan Period, although the architects maintained the fundamental architectural works of the temple, they, on the other hand, made many inventions and reforms. So changes occurred in the detailed works. Normally, the temples of this period are of large, medium and small sizes. But they all assume the manner of loftiness.<sup>28</sup> As they have many storeys, they seem aloft in the air. So they bear the sense of bravery or energy (*vīra*). The porches only with pillars and lintels develop to the ones with flame pediments and pointed arches.<sup>29</sup>

Although the stucco works of temples belonging to this period are beautiful and in high relief, they are not as massive as those of the Early Bagan Period temples. For the consolidation of the temples, sand-stone blocks as reinforcement stones, are used among the bricks in the corners, walls and vaults. Just as the main bodies are high, the back-drops of the porches are made to look aloft. Examples are Sula-mani, Gawdaw-palin and Hti-lo-min-lo temples. The three temples, Sula-mani, Gawdaw-palin and Hti-lo-min-lo temples are similar in design and dimensions, their construction periods were between the end of 12<sup>th</sup> century and the beginning of 13<sup>th</sup> century. Sulamani was the first and the other two were modified based on this. The construction systems of these are very large multi-storeyed temples, having very large core.<sup>30</sup> The plans of the Sula-mani temple, the Gaw-daw-palin temple and the Hti-lo-min-lo temple are basically akin to that of the That-byin-nyu temple which belongs to the transitional period. The That-byin-nyu temple can be said to be the earliest one built in Myanmar style. It is the highest temple in Bagan. Its plan is in square shape. The lighting systems of the Sula-mani, the Gaw-daw-palin and the Hti-lo-min-lo temples are similar. As they were built in the latter part of the 12<sup>th</sup> century AD and at the beginning of the 13<sup>th</sup> century, their lateral porches and window are open, allowing light and air into the temples and providing pilgrims with direct access into them.<sup>31</sup> Regarding the use of sandstone in constructing temples, it is found that a lot of sandstone was used in constructing the Sula-mani temple. Blocks of sandstone are used at equal distance on the walls of the main body.<sup>32</sup> Although the walls of the main body of the Hti-lo-min-lo temple are not made entirely of stone but of bricks, brick-bond is very good. To make the alignments of brick even, the vertically-laid brick alignments are made around the main body five or four feet apart from each other.<sup>33</sup> Blocks of sandstone continued to be used in the corner and other important places.<sup>34</sup> It can be assumed that, based on the temples of 12<sup>th</sup> century AD as the Sula-mani, the temples of 13<sup>th</sup> century AD as the Gaw-daw-palin and Hti-lo-min-lo would have been built with more systematic architecture.

Basically, although the style of the Late Bagan Period temples are similar to that of the 12<sup>th</sup> century AD temples, the architects of the Late Bagan Period could have made the temples more beautiful, much higher and more consolidated. However, the plinth of the Late Bagan Period is not so much massive. The thickness of the walls becomes smaller. Voussoired vaults came to be used boldly. The walls come upwards straight from the base and then vaults are made. The roof vaults of the encircling corridor become full. The most noticeably change is that the windows and lateral porches are made gaping so that light and

<sup>28</sup> Bomhu Ba Shin, "Development of Art and Architecture of Bagan Period", pp. 58,59

<sup>29</sup> Dr Than Tun, *Old Chronicle*, pp. 259-273

<sup>30</sup> Dr Kyaw Latt, *Art and Architecture of Bagan*, p. 136,137

<sup>31</sup> Fig-12

<sup>32</sup> Fig-13

<sup>33</sup> Fig-14

<sup>34</sup> Fig-15

air can enter the temples well. The number of storeys also increases. Exterior ornamentations assume loftiness. So the temples become high and aloft. Although the stucco crockets are peculiarly and strangely carved, these are no longer massive and in high relief. Instead, they are thin and carved in detail like lace-works. The ratio of the height and length of 13<sup>th</sup> century AD one-storeyed temples is 4 to 3. Besides, the height of the part above the main body is made equal to the length of the main body at minimum. So it is found that these temples assume the higher form than those of the 12<sup>th</sup> century AD temples. Therefore, the temples of late Bagan period would have been built with systematic interior structure and more beautiful works of arts by combining the expertise of the skillful architects and modern architecture.

### III. Conclusion

No brick human residence but numerous religious structures such as stupas, temples, pagodas, etc are found either intact or in ruin in Old Bagan. The reason is that as the people of Bagan were very devoted to religion, they constructed the buildings related to the Triple Gem of brick and stone in a grand manner but their houses of easily perishable wood, bamboo, etc. The temples have one entrance or four entrances. However, in Bagan, the temples with four entrances are the most common. In fact, the Be Be Temple with one entrance and the Lemyatnhar Temple with four entrances in Sri Ksetra which were the works of the Pyus who established a civilization in Myanmar between the 4<sup>th</sup> and 8<sup>th</sup> centuries AD are the proto-types of Bagan Period. But, generally, Bagan temples are larger and grander ones built based on the architecture and plans of Sri Ksetra temples and continued to flourish in Bagan after the 10<sup>th</sup> century AD. Throughout Bagan Period, kings and the people had been building pagodas, temples and other religious structures continuously in conformity with the changing times. The temples built in Early Bagan Period, that is, before the 10<sup>th</sup> century AD, are small and not decorated with architectural designs. Therefore, this period can be assumed to be the one during which architecture had not flourished. The Early Bagan temples called Mon temples are one-storeyed temples being in repose style. The most obvious fact is that it is dark inside the temples. The construction technology is different even in the temples belonging to the early and latter parts of Early Bagan Period. The Ananda Temple built at that time suggests that the vousoired vaults making technology became more advanced after the Early Bagan Period. In making vousoired vaults, they are not edged with wooden frames at that time. Although it is one-storeyed temple, it is made deliberately to look like high two-storeyed ones, opening two horizontal rows of windows on the walls. Therefore, it can be said to be the proto-type of the 12<sup>th</sup> century AD temples. Therefore, it can be assumed that, with the passage of times, the temples might have been built in a better and newer style based on the early period architecture. The striking characteristics of the 12<sup>th</sup> century AD Middle Bagan Period, which is the transitional period of architecture, are that the vestibules are made to get lighter and the temples are made high with more storeys. Getting more light and air by opening four porches and windows and making direct access into the main shrines and vestibules from the lateral porches are the proto-types of Late Bagan Period temples. According to the tradition of the architectural works of Late Bagan Period, windows and lateral porches are kept open to get more air and light.

In brief, the people of Bagan might have received architectural heritages, from Sri Ksetra, architectural technologies from Thaton and culture and arts from India about at the same time. Then they could have combined and adapted these diverse technologies and arts to their environment. Through the study of the evolution of temples architecture in Bagan Period from early to late, the political, economic and religious conditions of Bagan at that

time, in addition to the architectural standard of ancient Myanmar architects and their expertise in making excellently artistic works, can be known.

During the 13<sup>th</sup> century AD when the architecture of the temple reached its zenith, Bagan temples are the modified ones of Early Bagan temples which is built based on Sri Ksetra temples. The temples built during the 13<sup>th</sup> century AD which is Late Bagan Period, are called Myanmar style temples. The 13<sup>th</sup> century AD temples are higher than those of the 12<sup>th</sup> century AD. As they take on a higher form and bear the sense of ‘bravery’, they assume the energetic style called ‘*Vīra*’ in Pali. As an invention, distinctive room-formation was started on the ground plan. As the main bodies received enough light and air and were endowed with stone and stucco carvings which are more elaborate than those of Early Bagan Period, it can be said that the art and architectural standards of Late Bagan Period improved more.

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Figure 1. Le-Myet-Hna, prototype temple with pillar inside

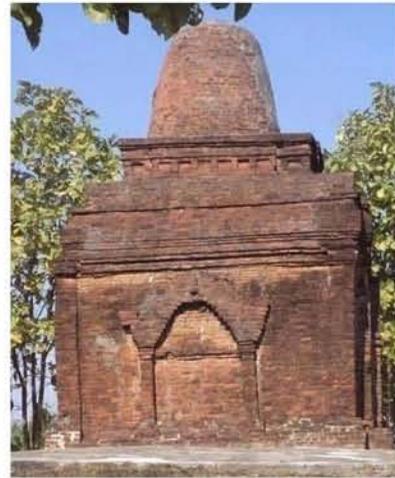


Figure 2. Be Be-Gu, single shrine temple, Sri Ksetra

(Photos by researcher)

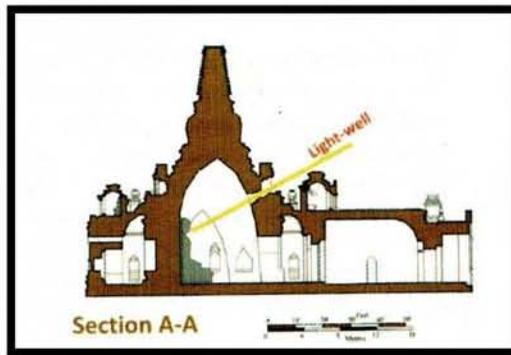


Figure 3. Pahto-tha-mya, light-well and section (Adapted from Dr Kyaw Latt, Art and Architecture of Bagan, p.66)



Figure 4. Lighting system in Ananda Temple, an aperture at the top of the inner wall to cast light over the Buddha image  
(Photos by researcher)

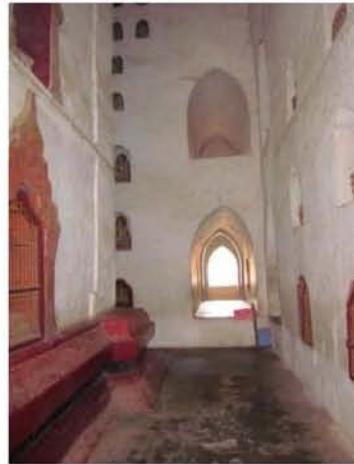


Figure 5. Double-layered windows through the wall to get light, Ananda

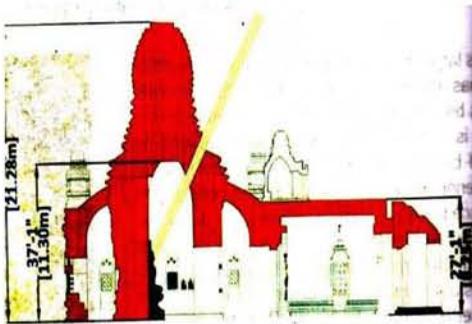


Figure 6. Gubyauk-gyi temple, light-well and section

(Photos by researcher)

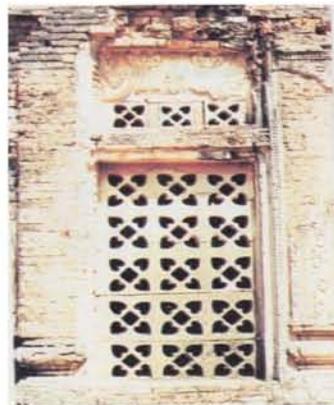


Figure 7. Perforated window of Gubyauk-gyi temple

(Photos by researcher)



Figure 8. Lighting system of Thatbyinnyu Temple



Figure 9. Perforated stone window of Nan-Hpava

Figure 10. Light and air direct access through the window of 12 Century (Photos by researcher)

(Photos by researcher)

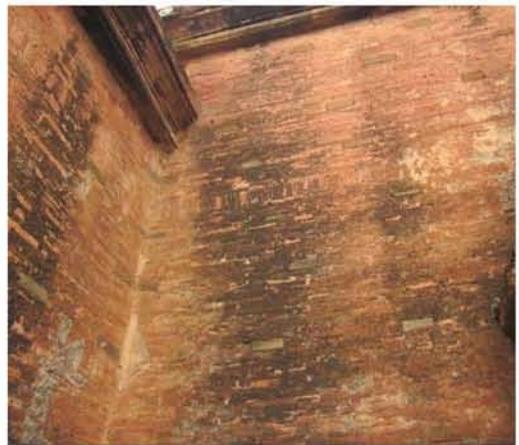


Figure 11. Light and air direct access through lateral porches, Htilominlo temple

Figure 12. Reinforcement of sandstone used in Sulamani temple



Figure 13. Brick-bond system of Htilominlo temple  
(Photos by researcher)



Figure 14. Reinforcement of sandstone used in Hti-lo-min-lo temple

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