THE ELEMENTS OF ARRANGEMENT AND COMMUNICATION IN STONE STRUCTURES

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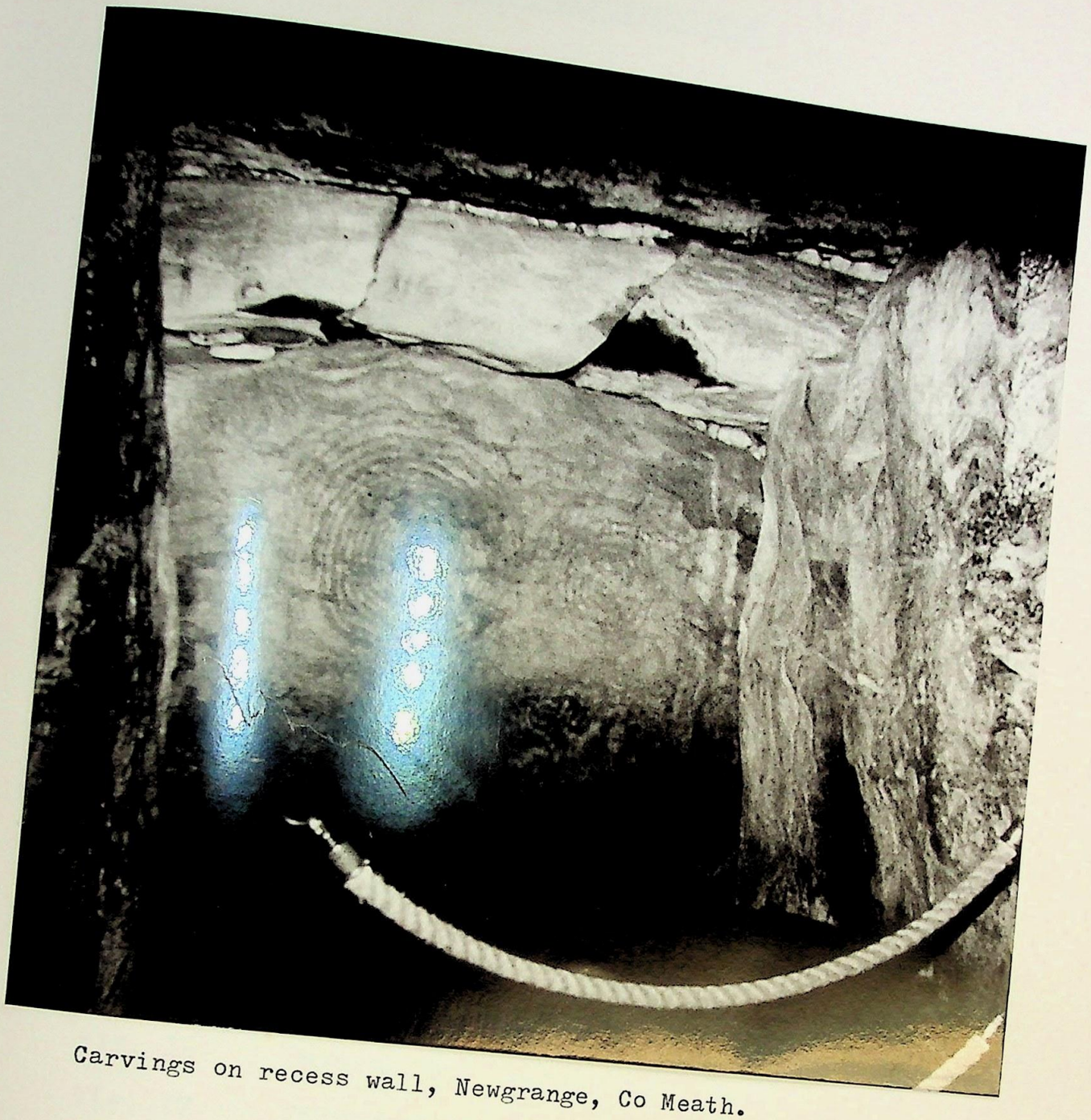
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INTRODUCTION

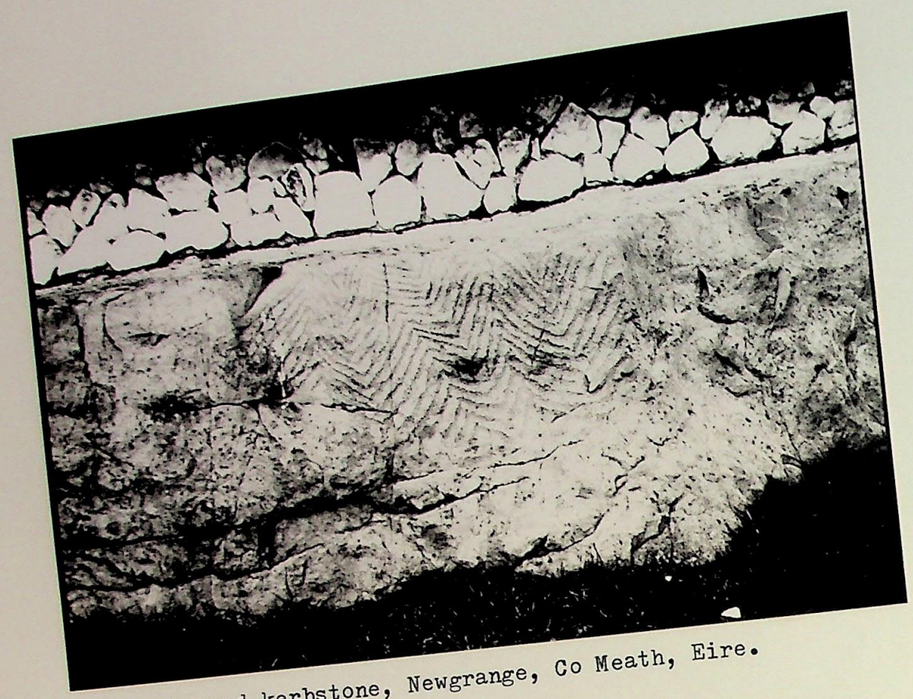
Antiquity has played a very important part in the forming of many modern idols. Handed down from generation to generation artifacts, objects of art and other precious artistic pieces of work have been vital in the realisation of our past. We can only learn from these art objects the importance of their zrrangements and communicative influence as a guide to making better our understanding of what we are ourselves and our importance in society as artists. This thesis explains how these arrangements and communications can be an important start to understanding these facts.

Nowadays in the world of art many of these early objects and complex buildings, which were then functional and had uses, are now labelled as being 'artistic' in concept. For example, artists, art historians and some archaeologists now talk of court cairns, passage graves and standing stones and other archaeological objects as being 'works of art'. We may ask ourselves if this label is true to the nature of the objects themselves. In my view it most certainly is. These builders in our early Neolithic revolution were undoubtedly Ireland's early sculptors and artists. They certainly had considerable artistic knowledge, and knowledge of arrangements and design that we would be grateful to inherit. From the evidence, these early sculptors had great capacities of strength both physically and mentally. This

is shown in some of these magnificant buildings and structures which I discuss in the later chapters. These large stone tombs, standing stones and other Neolithic buildings show how impressive their minds worked in terms of design. Newgrange is one of the best examples of this, both architecturally and artistically. Although they had functions which were visually obvious, I believe that they had underlying functions which do not remain as obvious to the present-day viewer. One has to experience the works and remain a participant to gain the underlying knowledge of what their functions were. In this thesis I seek to give clues of those underlying functions, and thus explain them. In some cases they had dual roles to play, and there is good evidence in the association between these early complexes and artistic work.

Looking at the arrangements in detail we can see from examination in later chapters that certain patterns emerge. These patterns of stones are undoubtedly artistic in their arrangements. They also used mathematical knowledge from which to build these objects and complexes. Some of those complexes still elude many art historians, artists and archaeologists, but this is not necessarily a fault. People may search for writings to explain these complexes, but they find none.

In the following chapters we examine the complexes themselves,surrounded with hints and carvings which show to us the energy that these people must have had. Some of the



Carved kerbstone, Newgrange, Co Meath, Eire.

kerbstones are richly carved, for example those at Newgrange, and some other important sites in the Boyne area explained. Tracing our early stones in their development, we see too the large sculptural skeletons of portal Dolmens and stone circles and standing stones. These sculptured stones were sometimes marked and placed in alighments which involved complicated calculations. Little is known of how they came to understand these things but, as well as their knowledge of aesthetics, their knowledge of astronomy was equally as strong.

In the final chapters I discuss the early stages of early sculptured stones which I regard as Sculpture in the modern sense. These were the first stones to possess an art significance and not a functional significance, except for the purpose of communicating this artistic sense. They took the form of 'holed' stones and 'cup marks' stones. These stones are early examples of traditional or modern sculptural art objects. This type of perforation and carving continued well into the 7th Century, A.D.

After thei there followed another set of carvings with an artistic communicative force. These became known as Petroglyphs and were the last carvings said to exist outside the La Tene culture before the coming of Christianity.

In the final sections of the thesis I discuss the communicative forces in stones which existed before Christianity. These stones of sculpture and language make up the last stages of arrangement and communication within stone structures of the Stone, Bronze and Iron ages.



Stone structure, Newgrange,(passage grave type)Co Meath,Eire.



Newgrange, Co Meath, EIRE.

CHAPTER I

The Development of arrangements in Stone Structures

1) Arrangement within Newgrange

The development of our antiquity was, in fact, rapid. Through its various stages we can examine its arrangements and its influences. The development of 'arrangement' is one of the areas which has had impact on our modern aesthetic values. Arrangement (or Design, which has become the modern term) deals with a particular artistic placement of objects or marks with creative impulse. During the Neolithic age there was a vast development of arranged objects and buildings in stone. Many became functional, while others were non-functional. In this first Chapter, I shall discuss the different elements of arrangement to be found in our early stone structures.

1) Newgrange
2) Dolmens
3) Stone Circles

Then I shall explain the meanings of the different arrangements we came across in each stone structure, and its development. I shall discuss the internal ornamentation, and finally its relevance to us in present-day terms.

It must be explained that before Newgrange there was a vast amount of previous developments. These will be discussed later. The initial statements in stone were small, involving singular sets of stones, but these statements changed through development and influences. These influences were derived from astronomical experiments carried out by their builders.

The initial experiments were simple but then they became more important and complicated. Their findings became almost sacred and religious and were not well understood by many people of the period. These early builders used the linear alignments of the sun to make their buildings in the correct situes. The sites tell us of specific times of the year, when the sun's rays are in alignment with marks in the buildings themselves.

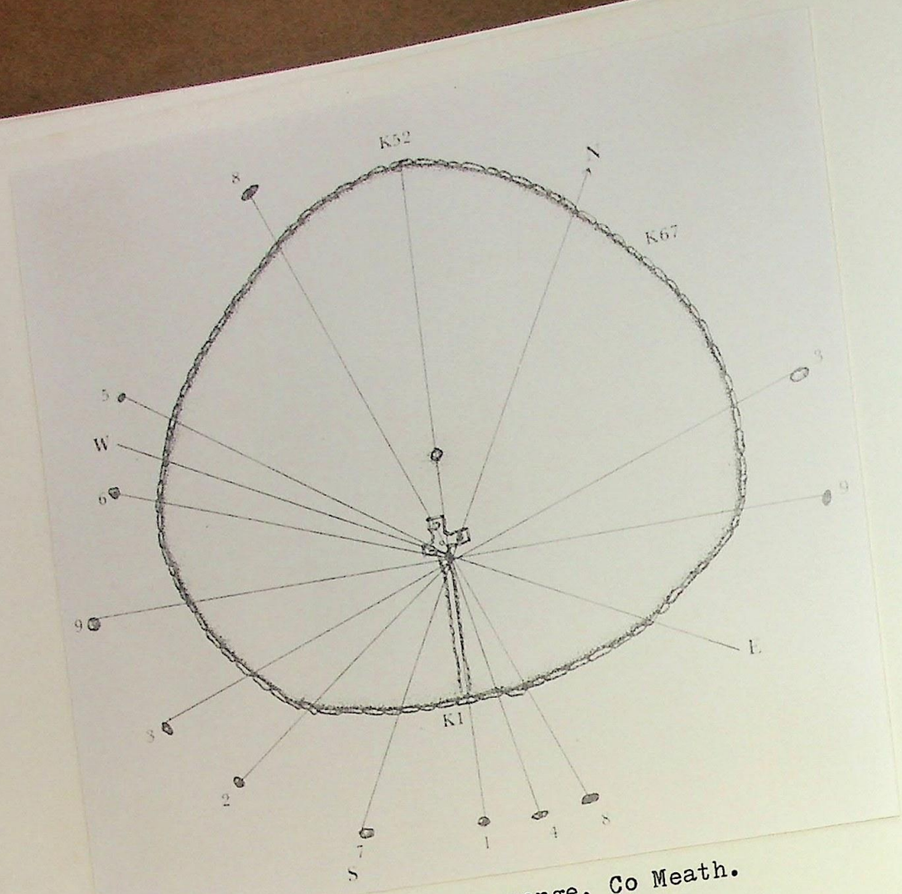
These builders who were, in a sense, our early sculptors and artists, possessed a genius or hidden knowledge not known to everyone. They calculated the important factors necessary for these arrangements to work and do their job successfully which was to give a specific time which would be used as a reference.

1) Newgrange: Taking the first of these structures, we can see that the arrangement within Newgrange involves this long and complicated structure which enabled its arrangement to have been calculated. Its arrangement is most certainly derived from astronomical calculations and many different mathematical influences.[1.] We can see from Newgrange that its builders arranged the stones in a specific way, which was very precise and involved thought processes and aesthetic appreciation beyond the comprehension of many people today. There are many different types of arrangements to be found in Newgrange in terms of its architectural design. The arrangements can be divided into three main areas:

A) The arrangement of the stones internally and externally.

B) The arrangements of calculationsand non-visual arrangements within the tomb.

C) The arrangements of ornamentations that exist within the stone structure externally and internally.



(Fig.I) Map of stones at Newgrange, Co Meath.



(Fig.IA) Detail of Entrance stone, Newgrange.



(Fig.2) Entrance stone at Newgrange, Co Meath.



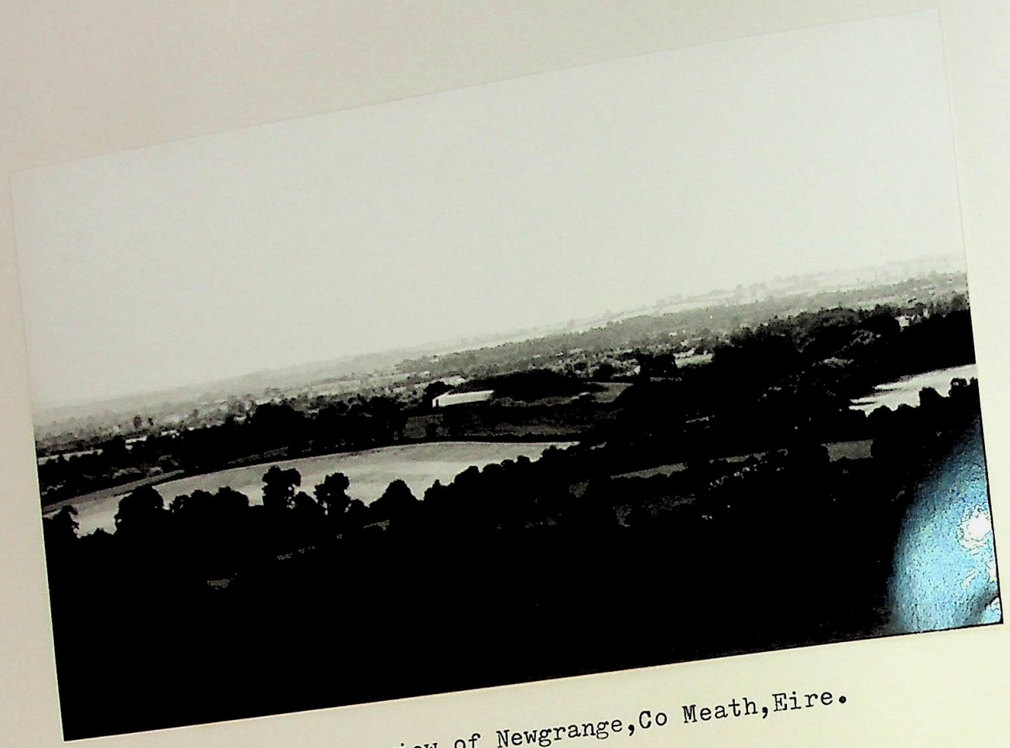
(Fig.3) Kerbstone 52, Newgrange, Co Meath.

Arrangement (A)

The arrangement of stones in Newgrange is the most important factor in the site since it makes Newgrange one of the better passage-grave buildings within Europe. The circular patterns of stones outside the mound provide clues to other important sites in the area.(Fig. 1). In the circle twelve have some significance. Stone No.1 marks the winter solstice sunrise alignment bearing and is placed in front of the very important entrance stone.

The Entrance stone to Newgrange (Fig.2) is almost certainly a time devise for the countdown to the winter solstice. The true bearing is marked by the one and only concentric circle to have an extension (Fig.1A). Stone No.2 marks thewinter solstice sunset and between Stone No. 1 and 2 the sun moves on the winter solstice. Stone No. 3 marks the sunrise of the summer solstice and No. 4 its sunset position. Stone No. 8 aligns with Knowth, which is another passage grave, and No. 9 towards Dowth, also a passage grave. No. 7 stone is an alignment with the North South meridian and Nos. 5 and 6 are equidistant to the East West meridian. The other stones in the Circular pattern are the Entrance stone, discussed above, and kerbstones 67 and 52 both situated on the kerb. Kerbstone 52 is situated directly behind the Entrance stone on the winter solstice sunrise bearing (Fig.3) and is at the back of Newgrange in the Kerbstone set.

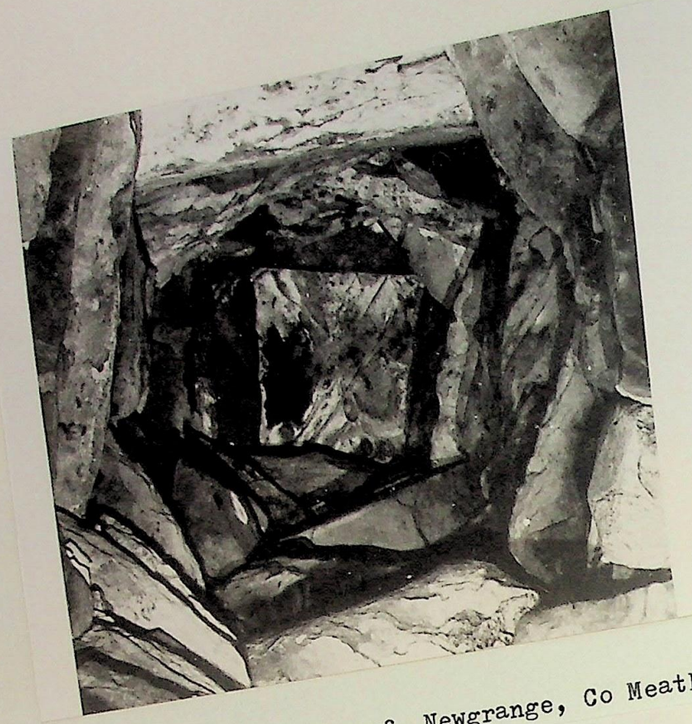
The more we examine Newgrange, the more we realise that the stones were arranged in a particular and premeditated way. It is this specific aesthetic arrangement which is so important



(Fig.4.)Landscape view of Newgrange,Co Meath,Eire.



Early morning view of Newgrange,mystical presence.



(Fig.4A) Corbelled roof, Newgrange, Co Meath.



Kerbstone 67 Newgrange, showing motif carvings.

for us to examine. These early builders of the stone structures would, in present-day terms, be regarded as 'Artistic' people for their achievements. Their builders were masters too in their ability to move and work on such large stones. The initial quarrying of the stones obviously required a considerable number of men. These men and masons must have had a lot of faith in their masters' prophesies[2]. and realised their special significance. Lookingfurther at the external stone arrangements of Newgrange, the white quartz wall above the kerbstones also became an important feature. The arrangement of the brightly-coloured stones and its visual impact insured the importance of the building in the area (Fig.4). The quartz being so white, it could be seen at great distances, especially during the winter solstice when the sun rose.

It may have taken hundreds, even thousands, of years to calculate the placement or arrangement of stones so precisely. The next important area in the arrangement at Newgrange is the passage. On entering the passage we gain a tremendous sense of power,which is emitted from the massive stones used in its construction. The stones are arranged standing ridged and firmly in a line for over 300 ft. and they emit a complete sense of presence and awe. These large stones surround but reveal the large chambers at the end of the passage. The arrangements include an intricate, corbelled roof which has yet to be surpassed for its architectural grandeur (Fig.4) in that era. For the present-day visitor it contains within many important sources: archaeological, architectural and, most important, artistic. It is through the use of artistic arrangements visible to us that its function and power can be



(Fig.5) Drawing of court cairn,Croaghbeg Donegal.



(Fig.6) Drawing of court cairn, Annaghmare co Armagh.

conveyed. Artist media[3]. are used to explain to us what its function was and still is today. These arrangements, which involved the initial calculations to make Newgrange, became important for its understanding to be conveyed.

These buildings, such as Newgrange, were the final stage in a complicated progression of arrangements of stones. These arrangements were to ensure the builder and designer that his final placement of the building was correct. Where Newgrange is situated, it is one of the richest passage grave areas in Europe and at that time must have been rich in astronomical calculations[3]. Tracing the early development before the building of Newgrange, we can see that many areas of building existed during the early Neolithic period. These were called court cairns and examples are to be found in Croaghbeg in Donegal (Fig.5) and Annaghmore in Armagh (Fig.6).

These are the earliest architectural arrangements to be found and play an important part in the early development of stone structure arrangements, especially in the later buildings. These court cairns became the link between places of important significance and the placement of stones to ensure that importance, for example, burial, ritual, boundary and so on. Then there soon came about a change in the placement of all stones. Since they were sometimes placed by sheer chance now they were very specifically arranged, both technically as well as artistically. Although these court cairns were a very sound technical background to the later megalithic passage tombs like Newgrange, they did not provide the necessary mathematical calculations for correct placements.

This was achieved through a development of arranged stones in order to calculate correct positions. Thus the link between the arrangement and the final passage grave tomb like Newgrange becomes apparent only in the initial stage of development, and these initial stages become lost when the final building is constructed.

These stages involved the placement of stones from which calculations could be made. These experimental calculations were carried out from astronomical alignments[4]. and correct alignments were marked accordingly, with stones from which references could be drawn. The initial marking method became very laborious and spacious, and sometimes involved many stones, so the mathematicians made use of the sun in order to make their calculations more reliable, with fewer stones. They marked angles and alignments onto the stones or stone series. Some stones when not in use became discarded. Finally when the calculation became complete, a few important stones were kept and all the remaining stones discarded. Then the complex structure was built using the correct calculations and the discarded stones were used for the building of the complex.

This final complex became the permanent structure which remained and Newgrange is one of the finest examples to survive. On examination of Newgrange, the innovators of the building drew a dual role for the complex: 1) as a complicated calendar
2) as a burial grave.

This first role enabled the people to calculate the end of one year and the beginning of another. They calculated this from the signals [5]. which are apparent. A new year begins when the

back wall of the passage is lit up and the chamber became illuminated during the rising sun at the winter solstice. The illumination of the chamber thus became religious and functional, since it facilitated the burial of their important dead, the second role for the complex building. It was also designed as a burial chamber. But I may suggest that this was only a disguise to ensure the survival of the complicated and more important calendar inside. Inside the passage the rich carvings show of other important sites with relationships to Newgrange.[6]. In the final stage of the completion of the complex from the entrance stone and surrounding stones to the back wall stones of the chamber their placement becomes apparent. Its functional qualities and non-functional elements merge to form the final arrangement.

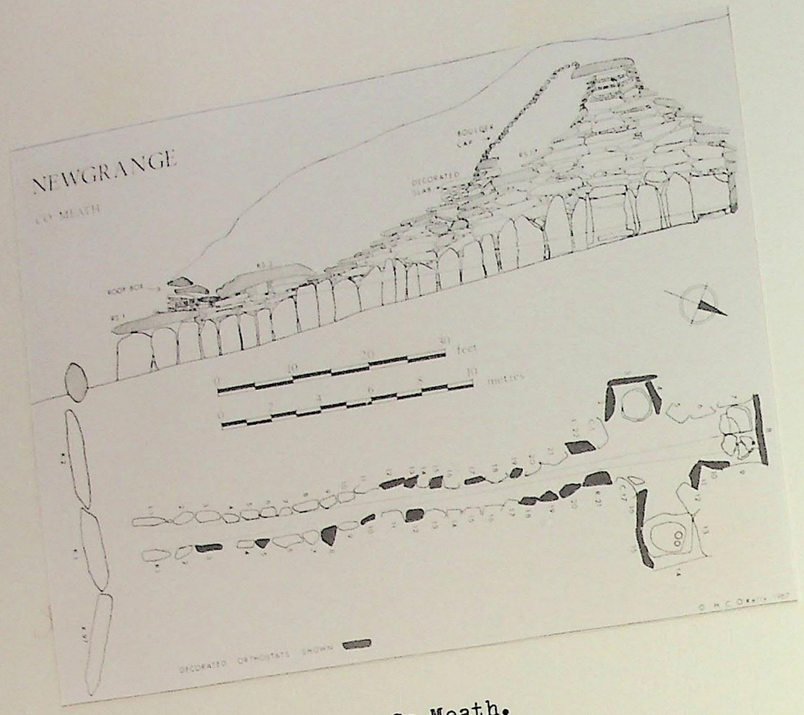
Calculation (B)

In the initial stages the process of calculation of the site to be used was in two forms:

1) Calculation from the sun.

2) Placement of stones in correct alignments.[4].

It must have taken years for the final calculations to have been made. Many stones were used and discarded and sometimes re-used. Thus stones often had a progression of markings which give different information. From different arrangements of stones a final set of stones with the correct alignment would be calculated. One would remain as the front entrance stone to a complex, and would be richly carved as in Newgrange.



(Fig.7) Map of Newgrange Co Meath.



(Fig.8) Light box and window, Newgrange.

From the others, other calculations and relationships explained earlier would be added. (Fig. 1).

This would complete the first stage in the arrangement process of calculation. In the second stage the calculation and direction of the stone circle and all the other directions would have been made (Fig. 7) for the other stones with alignments to other important sites, bearings and meridians, as explained on previous pages and in Fig. 7. The final stage involved the complex architectural feat in which the passage with its complicated window (Fig. 8) in which light is directed and then the chamber walls and the corbelled roof were built.

This stage would have been a number of decades later and possibly the role of importance was designed and arranged to include a burial section for important dead. Then the initial stone circle which was used for alignment to other important sites was left on the outside of the mound, thus completing the final stage of building.

Ornamentation (C)

The final area of arrangement within Newgrange involves ornamentation and decoration. The artistic sculptural carvings of Newgrange are probably the strangest of all art in Irish passage graves. These carvings are signals and signs to the visitor and tell of relationships[7]. which exist internally and externally within Newgrange. The entrance stone, which lies externally, shows the viewer the importance of this particular stone by the rich concentric patterns (Fig.1) and its signal is that the stone marks the winter solstics sunrise



(Fig.9) Carving on stone R2I, Newgrange.



(FigIO) Carving on stone LI9, Newgrange.

alignment. In the passage the grooved stone carvings on R21 (Fig. 9) and L19 shown in Fig. 10 guide the visitor to the end of the passage into the chambers. The carvings on the roof stones inside Newgrange show relationships to other passage graves (Fig. 11) and some represent complicated maps of complexes to be found in the Boyne valley. The art of many passage graves, including Newgrange, can be divided into three main interpretive groups:

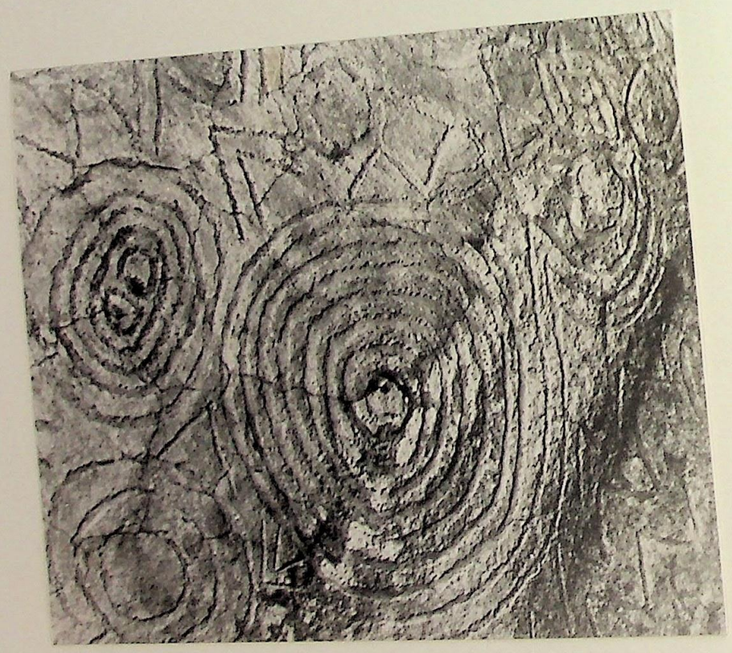
1) Symbolic in Significance
2) Ornamental
3) Functional signals.

It is hard to separate the carvings into different groups since some belong to more than one group and individual carvings in groups may have different meanings. It is noticeable that these interpretive groups have been divided on the findings and writings of scholars and archaeologists down through the ages. The most popular belief is that they are significantly symbolic. This is most certainly true of some of the carvings but not all. Some of the carvings remain within the symbolic codes in which they were first enclosed. Unfortunately, most of these codes have now been lost and remain a mystery forever. Unless the artist is willing to reveal his symbols, they can remain hidden for all time.(Fig. 12).

The other main area of belief almost certainly became Ornamentation. This category of arranged carvings is to be seen through all the early passage graves and visually relates to the ornamentation given to signals in order to conceal their messages. These messages belong to the final area or belief in the passage grave art arrangements.



(Fig.II) Carved motifs



(Fig.I2) Carved motifs.

Functional signals

This final section of carvings, although small, became hidden amongst the symbolic and ornamented codes, to ensure that the signals remained hidden. I believe that four main signals of hidden language remained within the carvings.

1) Relationships between Newgrange and other sites.
2) Calculations necessary to find the other sites.
3) Calculations necessary to give time references 7.
4) Relationships of sites with planets.

The interpretations of these four main areas make up the art of Newgrange and the signals for each are to be found intermingled with the symbols and ornamental marks within the passage.

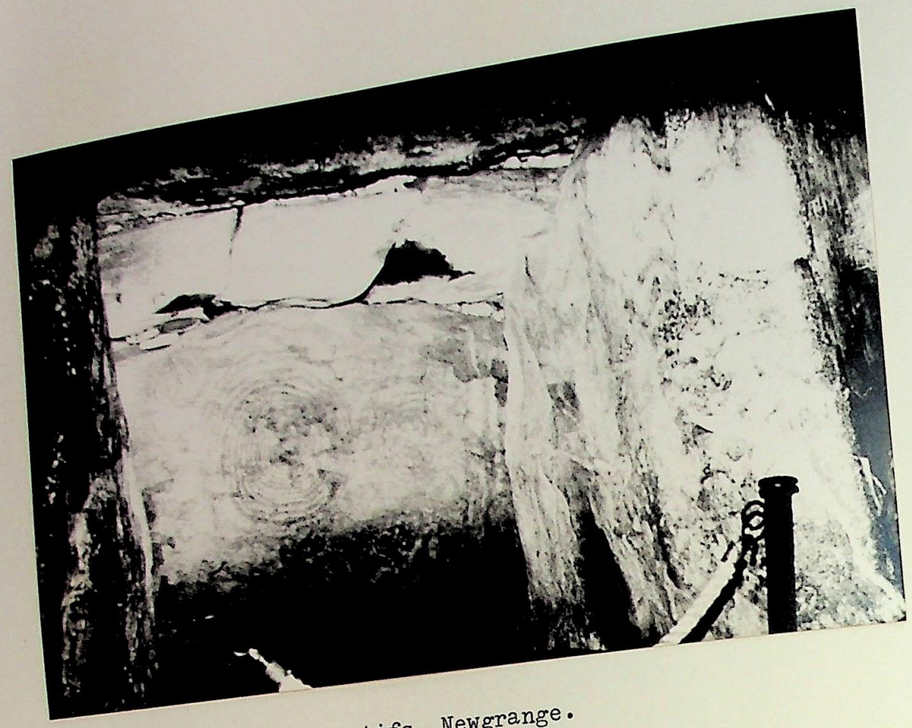
1) The relationships between Newgrange and other sites can be interpreted from the back wall of the chamber (Fig.13) and from its relationships with the large stone circle and the other circles where 12 stones correspond to the relationships of the concentric Rings in many of the internal carvings. (Fig. 7).

2) The calculations necessary to find the other sites are given in the relationships of marks and measurements on the back wall of the Newgrange chamber. (see Hidden Meanings Devices).

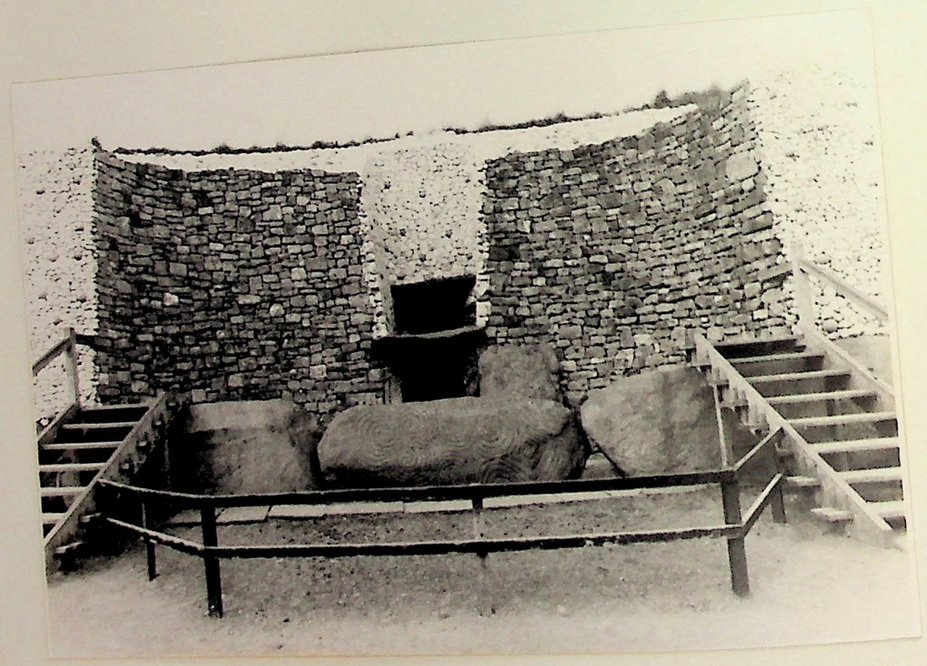
3) The calculations necessary to give a time reference and

4) The relationships of sites with the sun.

These two areas of signals can be found on both the entrance stone (Fig. 1) and the kerbstone 52 which also have very elaborate carvings giving alignments to various other sites. (Fig. 13).



(Fig.I3) Concentric motifs, Newgrange.



(Fig.I4) Front view of Newgrange.

The internal concentric carvings are symbols of time/death reincarnation and clues to prophecies which were foretold in their time but are now lost. Astronomical signs are also portrayed in the stone complexes and one must admit that they have within more than just burial graves for their great chieftans. The beginning of a new year is signalled on the back wall of the chamber where a large circular ring, concentric spiral probably represents the sun. These rays of sunlight are probably meant to be lured by this large, concentric spiral, representing its importance as a time piece.

The carvings inside Newgrange possibly pay homage to the sun's power and its importance and significance in their lives. The art within survives along with the arrangements. This megalithic passage grave thus gives many clues mentioned and many more we would be grateful to inherit. (Fig.I4).

2) Hidden Meanings within Newgrange

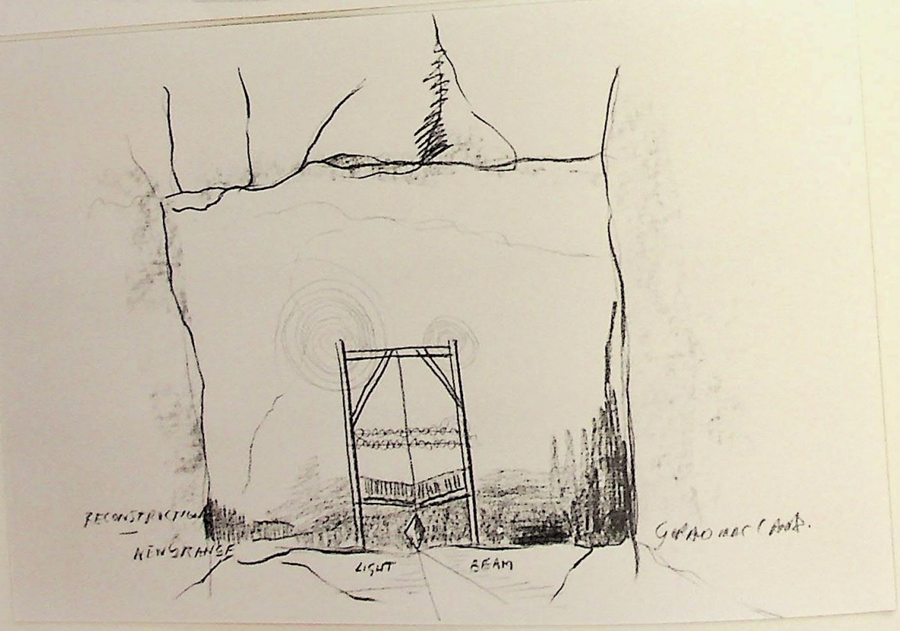
Emerging from the arrangements within Newgrange, we can convey hidden meanings from some of the topics which I have been explaining in the first part of this chapter.

From the earlier discussions I have explained how people could calculate from the sun the alignments which were used in the complexes such as Newgrange.

Newgrange left behind a strong link in which to study the arrangements and learn from their building and complicated calculations. They are important not just from the point of view of archaeological theories but a deeper understanding of ourselves and our own visual and aesthetic knowledge and how we can see these interpretations. Newgrange is, in my view, a connective force between art and stone structure arrangements as being a form of artistic expression. Newgrange is obviously



(Fig.I5) Carved holes on stone for devices.



(Fig.I6) Devices , Artistic impression,

the work of one (or many) innovators. The architectural designs and the complicated processes are created by genius. Those who created Newgrange were not only people of great astronomical and technical knowledge, but also were artists and our earliest sculptors.

The leadership which came from these innovators made it possible for tombs like Newgrange to be built. They must have been vital figures in their society. As well as the buildings themselves, we must understand that there must have existed considerable respect for the leaders and designers of such complexes. Then the complexes themselves became ritual and sacred, as did their functions. Newgrange must have become an important festive site, used for the worship of their dead, a sense of fulfilment and a calendar in which to calculate the beginning of a new year.

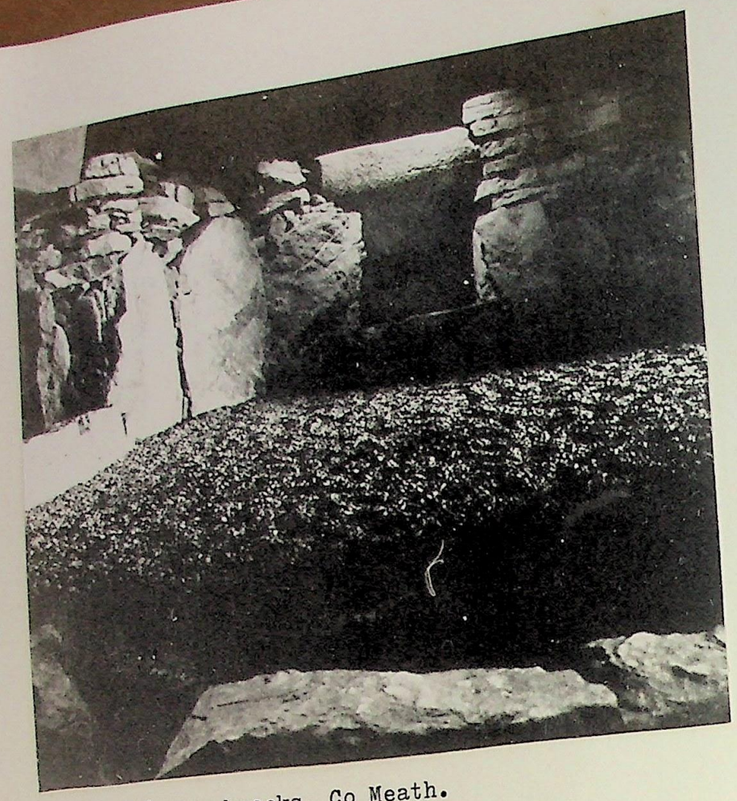
It also contained the dual role of calculation and religion. It was used for calendar calculation and also for the worship and burial of the dead. It is also possible that other calculations were made on the back wall of the chamber (Fig.15) using special devices inserted into small holes in the large stone. These devices could have been small and specially made for the purpose. (Fig. 16).

The very elaborate carvings on the entrance stone and the Rear stone kerbstone 52 could also have had some devices placed in front to make calculations. Apart from the lighting up of the chamber, which remains an obvious signal, every visitor gains a special personal interpretation of what it means.

Whatever the speculation, it is certain that a powerful sense of awe is attached to the place, a power which must have been enormous when it was being used. If one could imagine a gathering of thousands of people outside Newgrange - it is a festive gathering with jesters dancing, bonfires, music and drums, all awaiting the beginning of a new year. Then before dawn the high priest calls'silence'. The torches are quenched and a ritual countdown begins. With the beat of the drums the sun rises above the horizon and shines through the light box into the chamber and a new year begins. (Fig. 8).

It is interesting that the light box becomes an important feature here. Since they had fire and could have lighted torches, they did not really need the light to enter the chamber. Thus this proves that the entering of light had another purpose. It was proof of the existence of a calendar which has remained correct up to the present day. According to the theories of Professor O'Kelly in Cork, the calendar which exists within Newgrange is very punctual and on the 23 December every year the chamber is lit on the rising sun, and it only remains lit for a quarter of an hour of the days of the solstice, December 21 - 25.[8].

Finally, its calculations are numerous. Its art and arrangements are complicated. Its architectural qualities are beyond compare. But those messages which I have explained are speculative. The strength of the knowledge of time and the knowledge of space is achieved through the medium of art and arrangement. Thus knowledge is achieved through experience in its arrangements and its messages are still there for us to accept, uninterrupted and unchanged. Time stands still within Newgrange.



(Fig.17) Fourknocks, Co Meath.

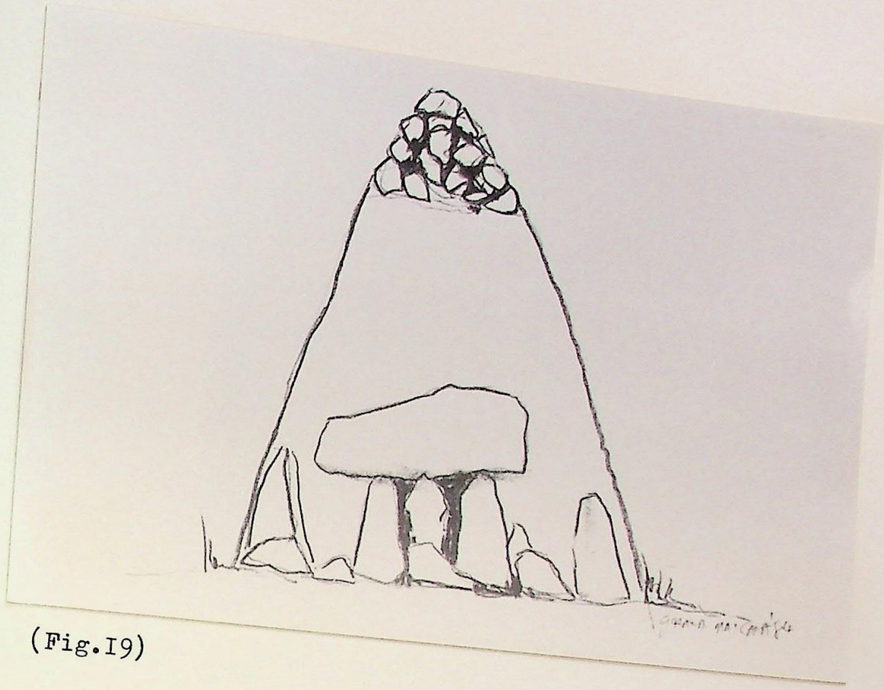


(Fig.18) Portal Dolmen, Kilclooley Mor, Co Donegal.

3) The arrangement within Dolmens

After the great megaliths of the passage graves arrangement and design changed, as did their art. They became known as Portal tombs, otherwise known as Dolmens. It is difficult to compare the inside of one of the passage graves expecially that of Fournocks in Meath (Fig. 17) with the portal tombs. But Dolmens situated in wild and dramatic places such as Kilclooleymor in Donegal (Fig. 18) can also be impressive. These Dolmens,lurching out of the ground, have a strikingly sculptural effect. The Dolmen (from the Breton word stone table) is in fact arranged like a stone table. They were very simple and were less complicated than their predecessors. They only had one function and that was for burial. Although they were only tombs and were without any decoration or carvings, their arrangement were equally as important as the passage graves. From the ground plans they may appear to have been thrown together but this is not in fact the case. Their design involved a carefully arranged set of stones on which the top larger stone would balance without falling down. After burial it was completely covered with a large mound of stones and earth. (Fig. 19).

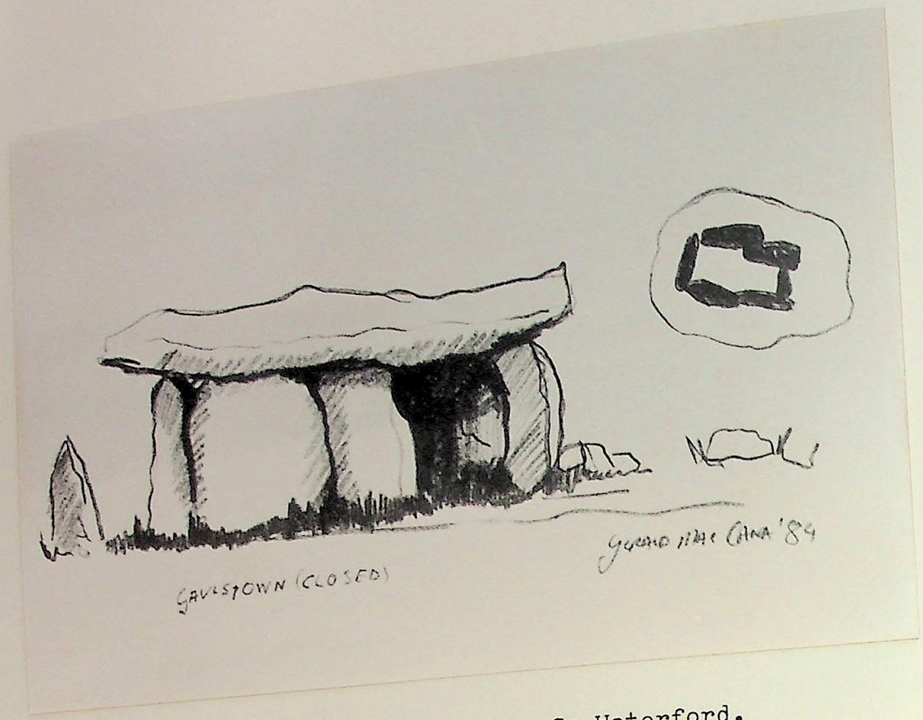
The designs of these Dolmens (Fig. Proleek in Co. Louth) led to the development of the later wedge-shape tombs (Fig.20) in the Bronze Age. But with the coming of bronze, the artistic attributes which enriched the earlier passage graves were now gone. The exploration and trial to perfect this new innovation became more important to them. The rich carvings inside and outside Newgrange were now forgotten. Their new interest in metal meant that the art which the earlier passage graves held within became dead along with its craftsmen and original teachers.



(Fig.I9)



(Fig.20) Wedge shape tomb,Carrowcrom, Co Mayo.



(Fig.2I) Closed portal, Gaulstown, Co Waterford.



(Fig.22) Open portal, Poulnabrone, Co Clare.

The arrangements within the portal Dolmens can be divided into four main groups, each containing a small tomb inside.

The arrangements of portal Dolmens can be divided into four main areas:

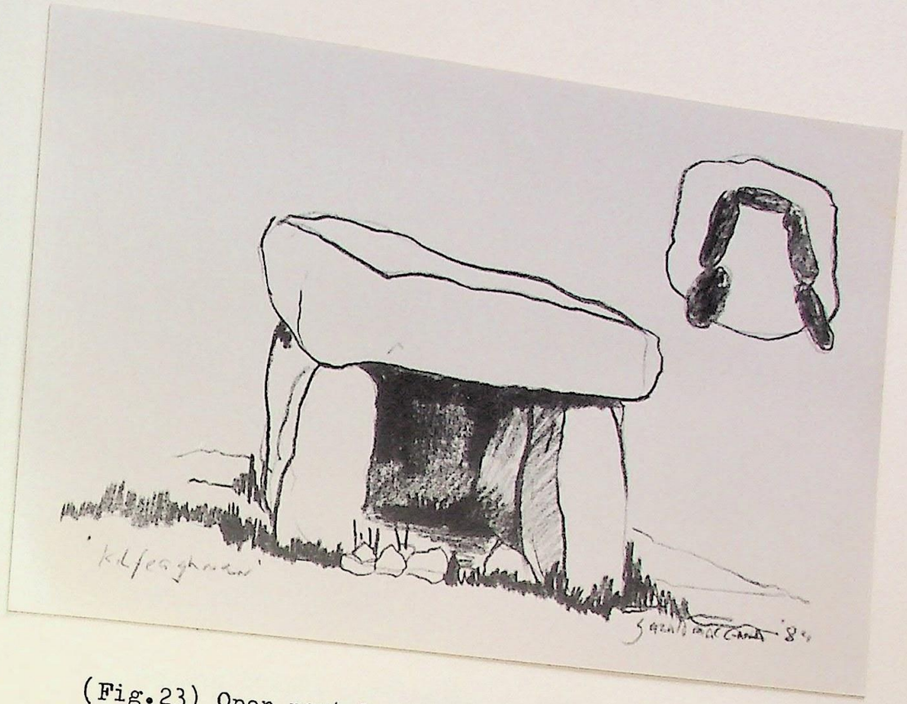
1) Closed Portal
2) Open Portal
3) Double Capstone
4) Triped Dolmen.

1) Closed portal Dolmens are those in which the arrangement of stones are in a circle, each standing stone overlapping the next, thus completing the circle. A capstone is laid on top to completely enclose the tomb inside. An example to be found at Gaulstown in Co. Waterford. (Fig. 21).

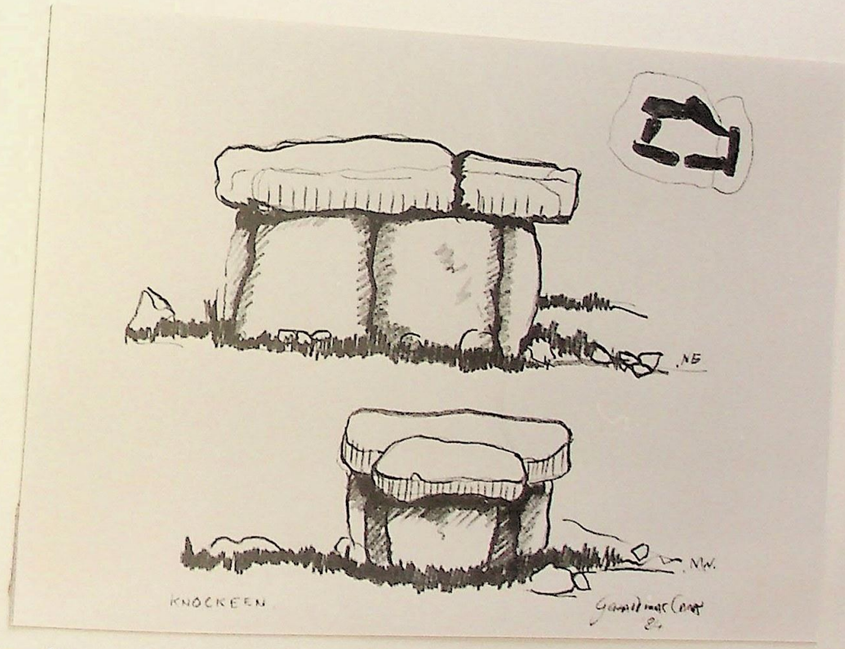
2) Open portal Dolmens are those in which the arrangement is shaped like a wedge and one end of the portal Dolmen remains open exposing the tomb. (Fig. 22). The open end usually faces North and the capstone again covers the tomb. Example at Kilfeaghan in Co. Down. (Fig. 23).

3) This is a rare and less visible portal Dolmen, since one ofthe stones usually gets taken away. It remains the same in ground plan to the closed portal but has two capstones instead of one and has not less than six stones in the arrangement. (Fig. 24). Example Knockeen in Co. Waterford.

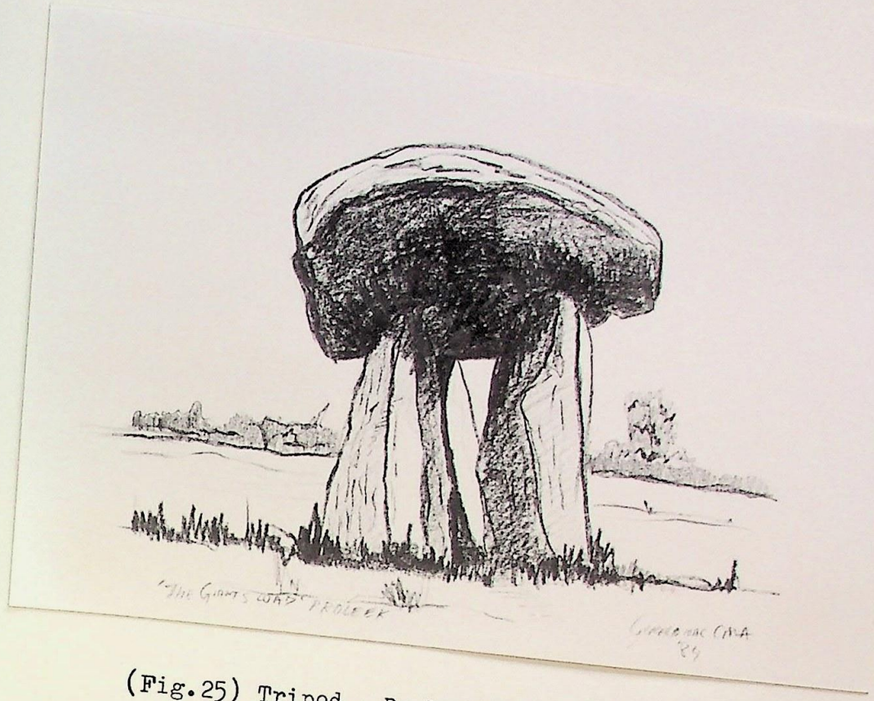
4) The final type of arrangement is probably the most spectacular in terms of visual impact and sculptural quality and effect. This is where the design involves three smaller upright stones bearing a larger capstone. The effect nowadays is much greater of all these portal Dolmens but in their time



(Fig.23) Open portal, Kilfeaghan, Co Down.



(Fig.24) Double capstone, Knockeen, Co Waterford.



(Fig.25) Tripod , Proleek, Co Louth.



(Fig.26) Alignment circle, Beaghmore, Co Tyrone.



(Fig.27) Beltany, Co Donegal.



(Fig.28) Detail.

they would have been covered as explained (Fig. 25) with a large mound of earth and stones marking where the portal was situated. Since it was not a very permanent material, erosion in time would have removed this covering, thus exposing the Dolmen underneath. Examples of this final type(Tripod Dolmen) can be seen at Proleek in Co. Louth.

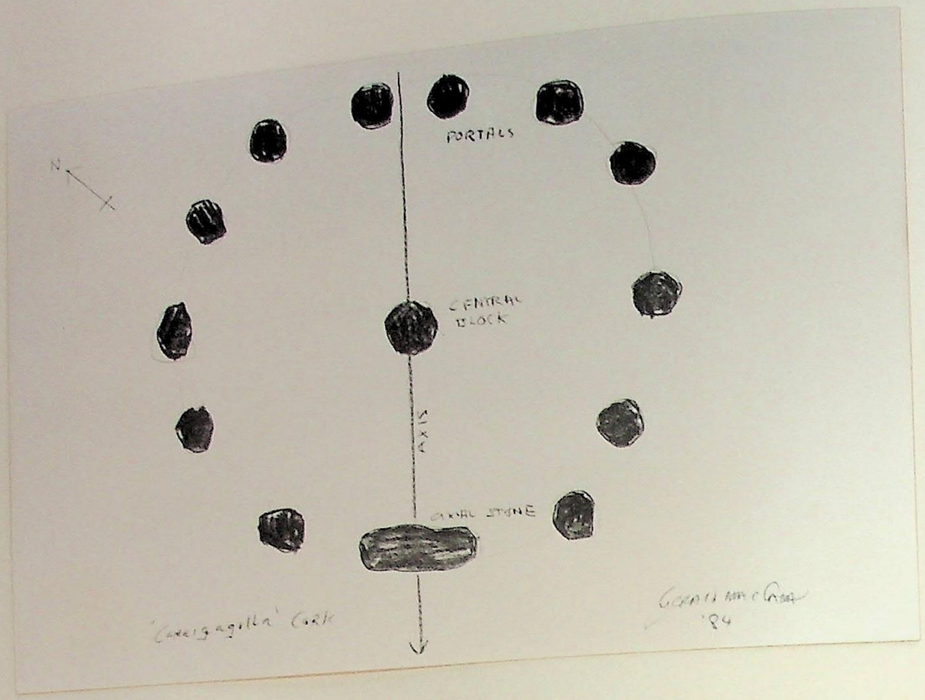
4) The arrangements in Stone Circles

During the Bronze Age there was a noticeable increase in the stone circles and single standing stones which were being arranged. In this chapter, I shall discuss the arrangement within stone circles. They varied in size from place to place and were divided into two main groups:

1) alignment stone circles - stone circles
2) axial stone circles.

In the first group discussed, they were very careful arrangements of stones placed in alignment to cists or cairns housed inside the circles. There were also many other complexes added at later dates during different stages of development of the final circle. The most complete examples of such stone circles are to be found at Beaghmore in Co. Tyrone. (Fig. 26). This is a complete example of a complex with several circle alignments to cairns, one of which contains a cist tomb. Another example can be found at Bettany in Co. Donegal, where a larger example houses a ruined cairn inside the circle. (Fig.27).

It is the second group which I regard as being more artistic,retaining the important elements of arrangement found in the early structures of the late Stone Age. These were called axial stone circles and were functional. They contained astronomical references for a viewer[9]. They usually were



(Fig.29)

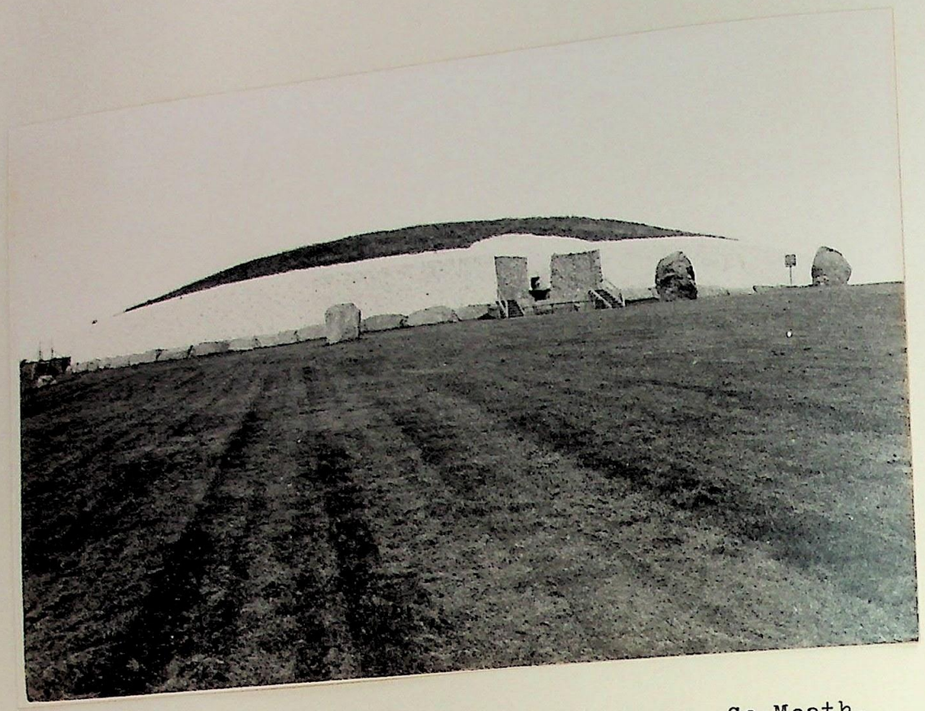


(Fig.30)

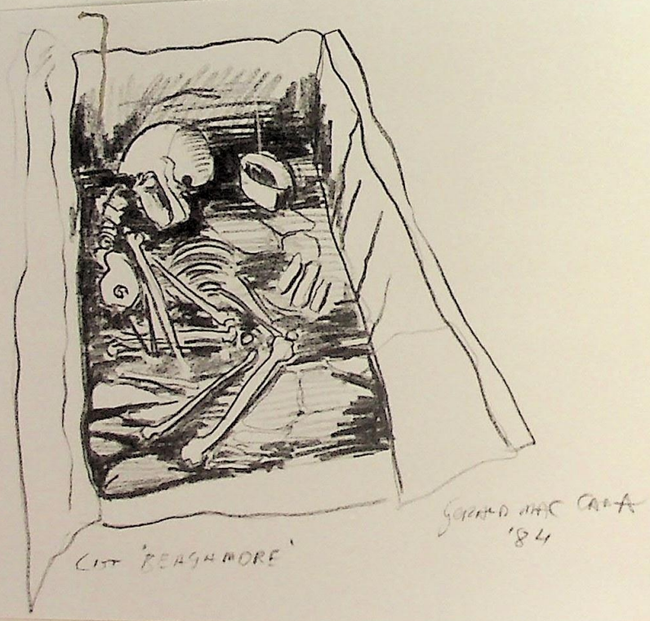
arranged in a careful circle of standing stones. (Fig. 28). There was within an axial stone with the two stones opposite being the portals of axis. The axis of orientation passed through the portals of axis and a central block usually in the middle of the circle to the axial stone on the far side of the stone circle. The axis of orientation is usually South West in direction from the North East side of the circle. (Fig. 29). The portal stones are usually double, meaning in two's, and also remain the highest stone in the circle, decreasing in size towards the axial stone. Examples are to be found in Carrigagulla in Co. Cork. (Fig. 30).

They possessed many links, as their megalithic passage-grave predecessors such as Newgrange, did. (Fig.31). Through mathematical calculations and the uses derived from astronomical alignments [4]. some circles may have been used for fertility ritual for the important chiefs or high priests. Their own relationships became as important as the relationships within passage graves such as Newgrange. When alignments were obtained sacrifice or worship became necessary.

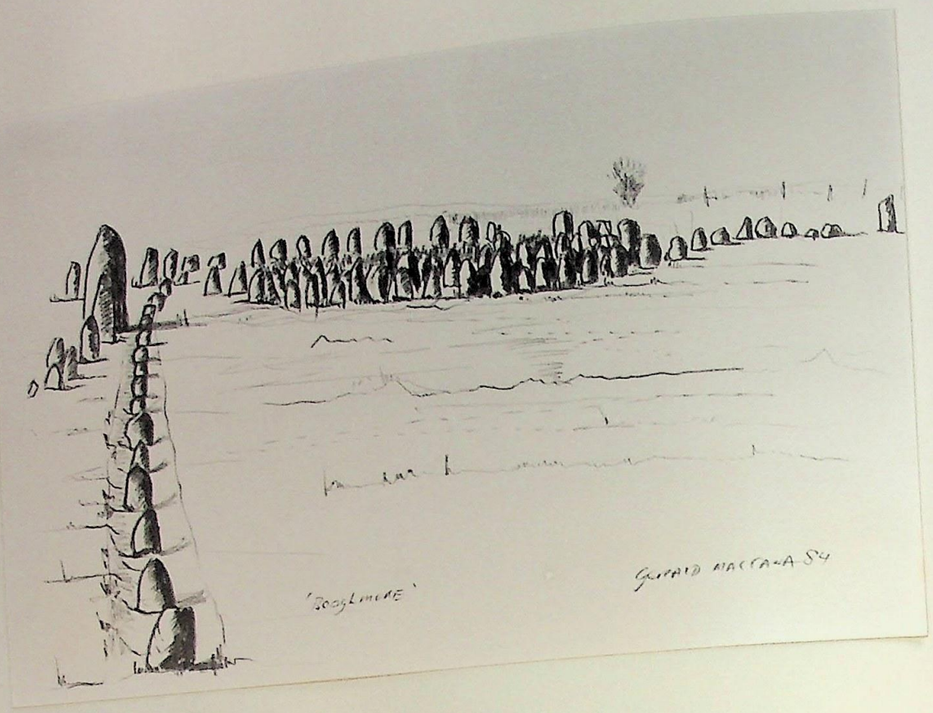
One notes that these stone alignments and stone circles and the later standing stones became (to put it in modern terminology) the new form of visual communication - the new 'language' of visual communication. One notices that these stone circles owe much to the traditions which, although lost, were in some cases handed down from the previous mathematicians. These mathematicians, whose calculations led to complex buildings such as Newgrange, thus provided the foundation for the complicated stone structures and the arrangements that followed.



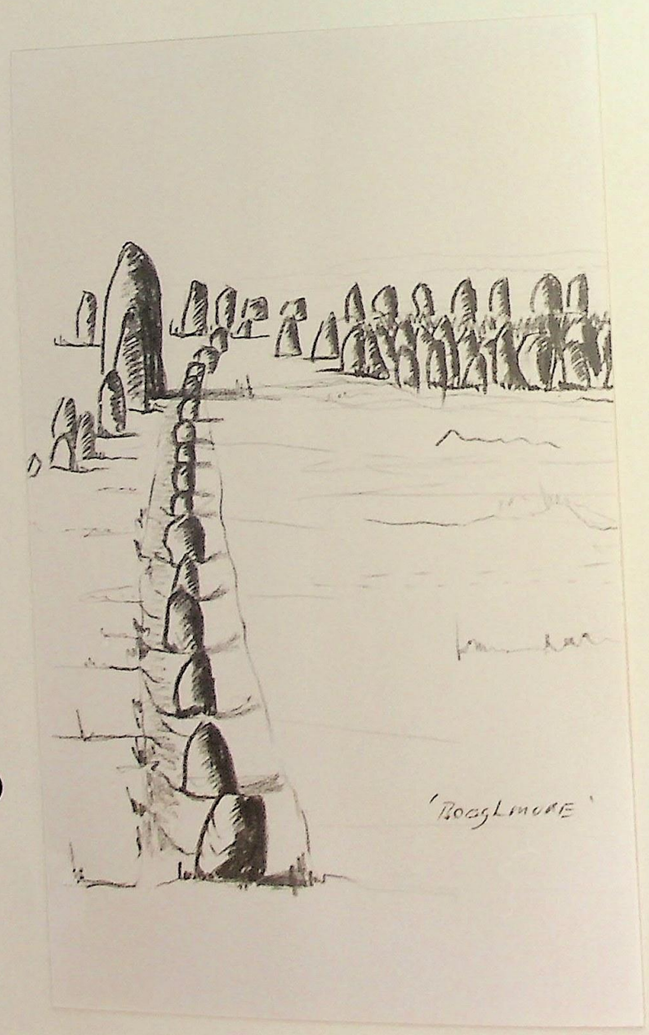
(Fig.3I) Passage grave complex, Newgrange, Co Meath.



(Fig.32) Cist at Beaghmore, Co Tyrone,(alignment circle.



(Fig.33)



(Fig.34)

This new language of visual communication became the new source in which information could be transmitted from one person to another. Marks upon stones and information, given in stone circles, became a new 'visual language', somewhat like the carvings in the Egyptian pyramids, telling historical details of family histories.

There are upwards of about 180 stone circles in Ireland and many were erected during different periods during the late Stone Age to the early Iron Age. From the two main groups discussed earlier I shall now examine, briefly, one circle in each of the groups, and look at their arrangement. The first example of these comes from the first group of alignment circles at Beaghmore in Co. Tyrone.

The stone circle at Beaghmore, Co. Tyrone, is the most complete example of an alignment complex to date. It has within it several circles in alignment (Fig. 32). It also contains many cairns, one of which contains a cist tomb. It was discovered during the cutting of the peat and it is almost certain more will be revealed when more peat is cut away. So far there exists a set of 7 circles and 9 alignments (Fig. 33) which can be seen. The alignment stones vary in height from a few centimetres to nearly 1.8m in height. One of the circles (Fig. 34) is filled with hundreds of small stones set in an upright position. In my view, it is possible that Neolithic occupations and farming preceded these stone structures. Explanation could be derived from the fact that irregular lines of stones also exist, probably marking field fences or perhaps the clearance of stones.



(Fig.35) Gowlane North, Co Cork.



(Fig.36) Detail of Axial stone, Carragagulla, Co Cork.



(Fig.37)



Axial stone circle, Kealkil, Co Cork.

This could explain the heaps of boulders present. Then since the land became infertile, ritual structures were built to try and make it fertile. At a later stage the peat began to grow over the site and it may be proof that the cairns and alignments were erected in a futile attempt to restore fertility to the soil.

Looking at an example of the other group of stone circles, they are much more impressive from the point of arrangement. One example is Carrigagulla in Co. Cork. Like the other group they are to be found on noticeably bad, infertile upland, with thin soil and bogland. As I have explained earlier, they come from the group known as Axial Stone circles (Fig. 35). This stone circle at Carrigagulla (Fig. 30) is to be found midst an amphitheatre of hills and mountains. It is a fine axial circle situated on a track leading up to the Boggeragh Mountains, at a point where it dips into the valley, from which the axis of orientation comes.

The stone circle measures 8.2m in diameter and comprises 16 stones and a misplaced stone which is separate from the circle. In this particular circle the arrangement differs slightly from the main group theory. The axial stone (Fig. 36) does not remain the lowest stone. As we can see from the diagram, the lowest remains to the right of the axial stone. The highest stone in the circle also remains outside the norm being the next stone situated beside the lower of the two portal-stones. In the middle of the circle can be seen the normal boulder with the axis of orientation and in a line from the axial stone and between the portals. (Fig. 37).

We can see from the stone circles of both the alignment type found at Beaghmore and the axial type found at Carrigagulla that most ofthe stone circles follow general rules in their arrangements. Some obviously vary in arrangement and some have

other stones added as other markers. Some circles have accompanying standing stones, discussed in Chapter 11, where individual marks are found on the stones. Within the circles sometimes the central block was of quartz. Quartz is an indicator of copper, and it is possible that it may have had a magical effect and significance. The presence of white quartz stones at monuments stretches from the Neolithic Age, as we saw in Newgrange, to the early Christian periods. Many of the stone circles are to be found on high ground, while others are to be found on low ground. Many circles situated on high ground possess only a few stones, possibly four to five stones in all, whereas some on lower ground often possess seven to seventeen stones disposed in a circle, but this does not really apply as a general rule.

Until recently, the Irish examples of stone circles have conveniently been ignored. In most cases, because of the climate, the success of the astronomical calculations would have been poor but some would have allowed for alignment with many astronomical events. Although many of the circles would have been too small to have made complex observations, it is certain that simple experiments and observations (for example, to determine the shortest day, sun and moon eclipses) would have been made. The rest of the stone circles in these two groups were possibly used as fertility circles to encourage the sun, and fertility to return to the soil, caused by over-grazing and lower mean temperatures.

FOOTNOTES

1. Astronomical calculations and mathematical influences:
Astronomical calculations are calculations which involve both lunar alignments and other alignments with the sun. Mathematical influences are in numeral form, which come from the calculations shown previously, for example 5 is to 3 as 10 is to 6. Five stones to three stones can also be added by making 10 stones relate to 6 stones. These influences could enlarge or decrease an alignment.

2. Master prophesies:
Their master prophesies would have been the design and arrangement of stones which they would hope to calculate what it was they were trying to convey in their final complex, i.e. to calculate the shortest day or the beginning of a new year.

3. Artistic Mediums:
The placement of a stone alignment or complex with aesthetic arrangement to be used as an artistic medium to create other arrangements.

4. Astronomical alignments:
Alignments of stones which were derived from observations calculated from astronomical evidence before them; sun and moon, stars and planets, etc.

5. Signals:

   Signs of communication used for conveying their findings.

6. Sites with relationship to Newgrange.

7. Time Reference:

   References which were given to specific times of the year: the shortest day, the winter solstice or the summer solstice; the equinoxes or equidistant days. Specific time references to lunar observations or important sun alignments giving a reference to a specific time.

CHAPTER II

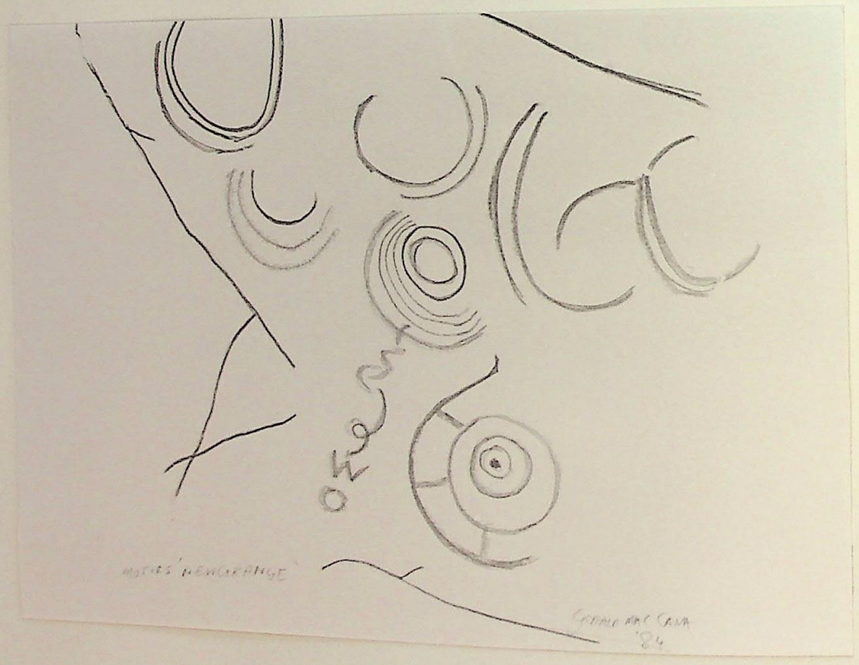
The development of communication in Stone Structures

1) Communication within Newgrange

As we can see from those great megalithic buildings such as Newgrange, or others such as Dowth and Knowth, these large stone structures played an important part in the society of that era. There were within signs that retained images which were engraved and insized upon many of its parts and many of the stones. These signs became a communicative force, a new language of communication, from which, when understood, could be translated messages of underlying knowledge. Some stones became specific in that they held within marks for specific reference to a time of year, as in Newgrange, where the winter solstice is known from the sun's rays illuminating the back chamber.[8] In some cases these signals became the beginning of a new year, and the end of an old one. These stones have inevitably outlived their builders, and have survived a span of thousands of years,and many lay in their original locations. They give us clues to the calculation of time reference, in other words, to calendars which became so important for these people. As well as their technical splendour in building such structures, they also had considerable knowledge of astronomy, for example, of the sun, moon, and many other planets. From the placements of the stones we can see that they were situated with these astronomical calculations in mind.



(Fig.38)



(Fig.39)

Many stones appear to have no connection to the building inside, e.g. as in Farranahinery in Co. Cork. (Fig. 38). Explanations for this could be that they were not originally connected with the internal stone complex but were built previously and were used as alignment stone circles. These stones, as I have already explained, could have been placed for observations from which bearings could be drawn (see Chapter I(4) Stone Circles).

It also became necessary to communicate with others and not just for time communication. It was for this reason that they began a system of messages carved onto stones, which were placed in random locations. But these are rare since there was a shortage of large stones and sometimes they were used to build larger complexes. Some of these stones can be found within Newgrange. Although they were hidden to the onlooker within the chamber they became revealed to the archaeologist during excavations.[10] (Fig.39). These marks were possibly marks showing particular buildings with reference to where the stone was positioned, giving directions possibly with carvings on the side of the stone. It also began a new stage in the development of communication. Rather than by word of mouth, messages and visual meanings could be conveyed with a pictorial language carved onto the stone.

During the complicated process which was necessary for the building of Newgrange (explained in Chapter I), there remained thousands of stones which were not used for other buildings or messages. These stones range from a few inches to over eighteen feet in height. In Chapter I it became necessary to start discussion with the large passage grave

i.e. Newgrange, to show the finished complex, and then explain the background where smaller stones were used. In this Chapter, I use the carvings of communication to give the background and initial stages to explain a new communication in stone structures. These early Neolithic structures, and Iron and Bronze Age complexes, became cogs in a large wheel which must have taken thousands of years to complete in this new 'language' of visual communication.

In the time of Newgrange, the common people would have known little of the calculations, only what they told of them. With the special knowledge which was calculated by their innovators they commanded the situation. This knowledge of astronomy was their key and ensured an effective force in having a special place in society. It was necessary for a specific time to be known from which they could take reference. The same ritual has been handed down to us today of the importance of the new year. It must have been equally important for the people of that time. Newgrange still remains the link even today; its function still operates.

From the first Chapter we see that the carvings which are divided into three groups: symbolism, ornamentation and language, are all attributes of the carvings at Newgrange. These theories of Martin Brennan The Boyne Valley Vision (see Footnate 9) explain the divisions in passage grave carvings but to separate individual carvings under any particular label or group is to delete some of the original meanings of which the mark might have originally been intended. In my view, when a stone became holy or important or precious or had some underlying meaning, it was then marked. The people of



(Fig.40)



(Fig.4I)

that era knew the language of marks, whether important or just random ornamentation, as we do our writing today. During the Bronze Age and Iron Age the role of communication in stone structure changed and developed from the hidden meaning to a more positive pattern of visual marks on stones with some positive connotations and relationships.

2) Communication in Standing Stones

The communicative force within the stone developed and men tried to communicate through marking stones in different ways to develop their craft. This intermediate group possibly became known as 'holed stones' because of the perforations carved onto the stones. It has remained a neglected area but this is probably due to their function and partly due to their sexual connotations. Recorded traditions[10]. drew a connection with fertility but their perforations could have had other functions. It is doubtful that they had any astronomical connection since there is very little evidence.

Followingthe development, another group evolved and became known as 'Petroglyphs' or 'Rock Scribings'. Apart from the obvious cup marks which are clearly visible in this petroglyph at Staiguebridge in Co. Cork (Fig. 40), it is possible that they represented complexes or other buildings with their relationships to each other drawn or carved onto the stone. Other lines which were drawn could represent field-lines or boundaries which have now been forgotten or changed. One thing is certain, and that is they were divided into two groups. Where the stones were natural, the carvings remained

horizontal, and in the case of boulders, they remained vertical and were all out in open sites. Their solutions are probably harder to solve than that of the carvings at Newgrange, but the petroglyphs were definitely as well organised with a particular aim of communication as their source.

It is noticeable that through the ages people's traditions have remained firm in the knowledge that stones with marks must be important and sacred and must possess some hidden power which would only do the person good. Some traditions have led people to believe that stones held special powers within.

It was only after the coming of the Celts that the changing roles of communication became more apparent. It was mainly divided into two main groups:

1) Sculptured stones.
2) Language stones.

The Celtic evolution brought forth many revolutions of communicative force, for instance, languages which were developed from their parent tongues in Europe, and art and metals were also imports of these new immigrants to our lands.

1) Sculptured Stones.

Apart from a few carvings during the Bronze Age, most of the early sculpture was confined to the large buildings such as passage graves, where designs were confined to mystic decorations such as that at Newgrange, which I have discussed in Chapter I. But there came about an influence which came from the highly-developed La Tene culture in France, which changed and revolutionised a small section of stone-carving in Ireland.[11] These brought a fine art of flowing spirals not too unlike the spirals at Newgrange in the entrance stone. This new culture

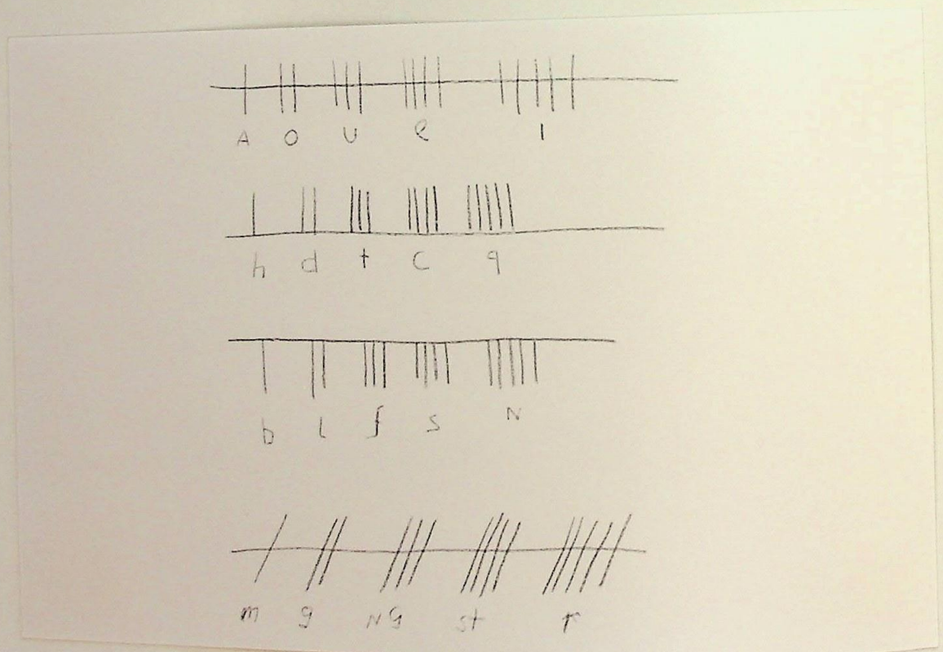
brought about one of the masterpieces in European sculptured stones. It became known as The Turoe Stone (Fig. 41) and was a large phallic granite pillar, beautifully carved with a new meaning of communication, and this was to give artistic presences. Unfortunately the Torue Stone, which it situated in the Galway region, is the last surviving in a series of large phallic stones. One can note that the Tueor Stone marks the beginning of early Irish sculpture, as we know it today, and led the way for some superb carvings on stones. After this, the stone heads of the La Tene culture began to be carved, and developed for reasons of defence to ward off enemies during the period. The Iron Age Celts were also fascinated by the tombs, alignments and stone circles of their predecessors. It could have been possible that they used these tombs, and carved within them, thus adding complications for our present-day archaeologists to decipher the different stages of carving on the stones. The second group of communication took the form of language stones.

2) Language Stones

These stones took the form of pillars or standing stones with inscriptions carved on the sides of them. These inscriptions used a script-based alphabet, which became known as 'Ogham'. It was composed of a series of strokes above and below bare lines on the edge of the stones. Ogham is a word derived from the God of Writing 'Oigmiu' so it definitely forms a structure with communication its sole purpose. It is now certain that Ogham stones (see Fig.41A) [12]. were Iron Age memorials, usually bearing the name of the deceased and his pedigree. It started off a new form of communication which lasted well into the 7th Century, after Christianity came, and



(Fig.4IA) Ogham alphabet, stone at Killeen, Co Kerry.



(Fig.42) Ogham alphabet, detail showing each letter.

some of the finest stones can be seen in the south. It can be noted that during the period of Ogham Ireland changed from the society of arrangements in our prehistory to a society in which facts became mixed with myth and legends.

One can see from examination, that Ogham is not,as some people imagine, a language but an 'alphabet' which with little modification can be adapted to any language. In the early period it was adapted to an early form of Irish. We do not know who invested our archaic script but we do know that the inventor based his cypher on Latin, of which the Celts came to have knowledge. Many believed that it was based upon the Greek alphabet but from the findings of Prof. Cannon Power 13. there is little evidence of this.

There is no doubt that on examination it shows that for inscriptions on stone an alphabet in straight lines is the most convenient, both to understand visually and to execute. The Celtic people knew the Latin alphabet and were acquainted through teaching with the Roman fashion of erecting mortuary tablets, so they borrowed both for their own purpose. But, while they borrowed the ideas, they altered the expressions to conceal their origins. The Druids invented new characters and marks for their alphabet and also designed a new form of grave memorial. From examination (Fig. 42), we can see that the inventor disguises the alphabet very well and also makes it fairly easy to read.

FOOTNOTES

8. On 21st December 1969 Professor O'Kelly awaited the sunrise inside the passage grave at Newgrange. Here are his notes:

"At exactly 09.54 hours B.S.T. the top edge of the ball of sun appeared above the local horizon and at 09.58 hours the first pencil of direct sunlight shone through the roof-box andright along the passage to reach across the tomb chamber floor as far as the front edge at the basin stone in the end chamber. As the thin line of light widened to a width of 17cm and swung across the chamber floor, the tomb was dramatically illuminated and various details of the side and end chambers as well as the corbelled roof could be clearly seen in the light reflected from the floor. At 10.04 the light beam began to narrow again and at exactly 10.15 hours the direct beam was cut off from the tomb. For 17 minutes therefore at sunrise on the shortest day of the year, direct sunlight can enter Newgrange not through the doorway but through the specially contrived narrow slit which lies under the roof-box at the outer end of the passage roof."

9. Both M. Herity, whose excellent book Irish Passage Graves (Dublin 1974) is valuable for its many aspects of the subject of excavations, and E. MacWhite (A New View on the Irish Bronze Age Scribings in the Journal of the Royal Society of Antiquaries of Ireland, 1946, Vol. 76, pp 59-80) describe these forms extensively.
Also Claire O'Kelly Illustrated Guide to Newgrange Blackrock, Cork, 1978.
Also Martin Brennan theories on carvings in The Boyne Valley Vision are to be noted, pp.13-15. (see Bibliography for reference).

10. There is little evidence of traditional recordings except by word of mouth and from what people are told but,as far as one can gather, it is probable that they had a connection with fertility and easy childbirth. As with bullaun stones, most are associated with early Christian sites. One at Caherurlagh (Cork) was certainly used within living memory to cure barrenness in a sow and others were used as trysting stones where lovers touched fingers through the hole. One known as the Sinners Stone at Kilquhane (Cork) was resorted to by pregnant women who pulled rags or small pieces of clothing through the hole to ensure easy birth. Early Ireland - A Field Guide, Anthony Weir, (p. 28).

11. La Tene: Site of a great Iron Age vortice deposit at Lake Neuchatel, Switzerland, which gave its name to a characteristically curvilinear decoration, i.e. the Turoe Stone, Galway.

12. Ogham: Irish script composed of straight strokes perpendicular to or at an angle to a straight baseline.

Ogham stones were late Iron Age memorials because of the bearing of names of persons probably deceased together with his pedigree, which was indicated by a formula such as Magi (son of), Avi (grandson of), Magi Mucdi (member or son of the people of), or Celi (follower of).

Early Ireland - A Field Guide, Anthony Wier (p.49).

CONCLUSION

As we have seen, the development of our arrangements and communications in stone structures thus went through various stages and, as we can see, held within links and messages of what these people possessed in terms of artistic design and knowledge of aesthetics. In the beginning they obviously had origins and based their buildings or beliefs on some of the most important insights to have come about in such times. These insights were handed down from their earlier ancestors and involved complicated calculations to achieve the final arrangements or complexes. It would be premature to assess their achievements, but it is evident that they were dealing with astronomy and used logical methods for finding their information. They went beyond the calculation of simple agricultural calendars but made long and narrow passages (as in Newgrange) which elongated beams of light to attain a greater accuracy in the calculation of a new year. Where these methods came from is another mystery.

It is believed that they possibly came from the Far East and the fact that links between Newgrange (Ireland) and the Pyramids in Egypt are not as far-fetched as it may seem. They were obviously built for a reason. Some of these structures involve large singular stones, others involve complex structures and buildings. One thing is certain they must have had functions beneath those which are visual. For example, in Newgrange in Co. Meath (Fig. 4), these functions had a dual role to play. One



(Fig.43)



(Fig.44)

of calculation and memorial inthe case of remains which were housed inside the chambers. It is possible however that the second role of burial was in the later stages of the complexes' development.

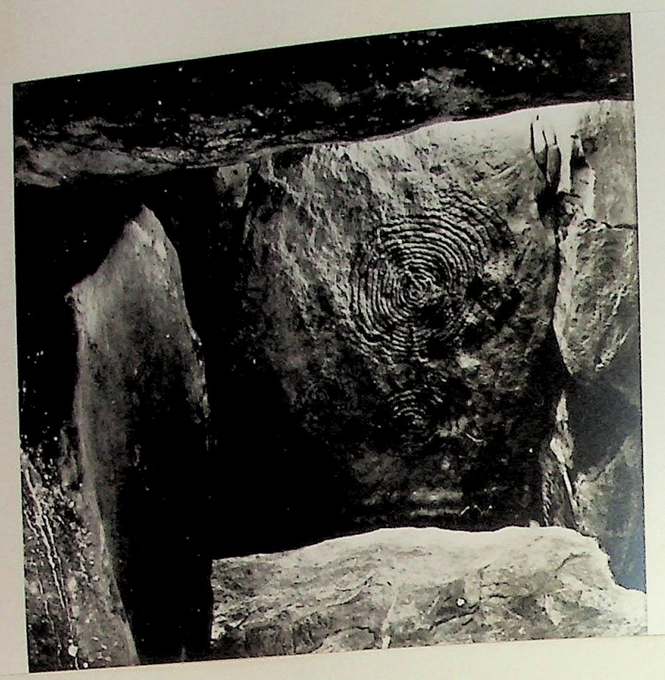
Looking at them visually, they have a most definite sculptural quality which has not yet been surpassed in terms of experience and mystic presence. We can see that through developments which were not necessarily an improvement in these arrangements in form and design.

From Newgrange and its complex structures to the more simple arrangement in Dolmens, standing stones and stone circles, we see a change to observation and design rather than burial or both roles as in the case of the earlier passage tomb complexes. Tracing the backgrounds to the complexes can be done through historical and archaeological studies but tracing the underlying meanings can be more difficult. I explain some of my own theories of these backgrounds and why some of these complexes were built in the earlier chapters. One asks why many of these stone structures have been built and one can see that their builders took great care in their construction, whether it was a singular standing stone placed in the landscape as at Forenaghts in Co. Kildare (Fig. 43) or a complex building such as Newgrange (Fig. 44). It is certain that their placement was an important feature in their arrangement. The purposes for the placement of the stones depend on the individual sites but falls into three main categories.

The main category is the function of communication of time reference as in Newgrange and Knowth. There were other functions for these arrangements too which were the dual role of memorial and burial of their dead within the complexes.

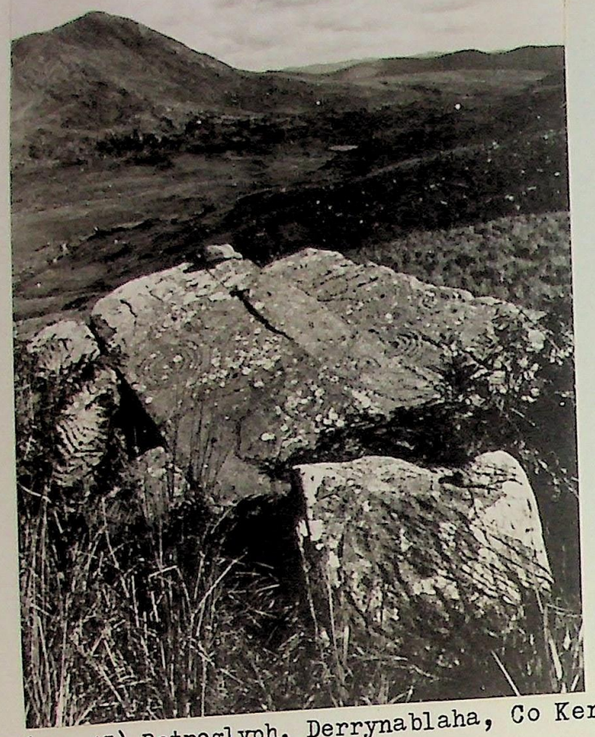
The second category is the arrangement of stone in circles or alignments but without dual roles of burial in the initial stages. Cist or cairns were sometimes added at a later date, i.e. Beaghmore, Co. Tyrone. Examples of these arrangements are to be seen at Carragagulla, Co. Cork, which come from the axial stone circle group, and at Beaghmore, Co. Tyrone, which comes from the alignment group. These show a development of stone structures with burial and communicative functions to simply observation and astronomical alignment.

The final group are stone structures which involve the total communicative force from which a sculptural language evolved. Information was transmitted from one to another in the form of petroglyphs or sculptured stones. Examples are to be found at Staigue Bridge, Co. Kerry and Derrynablaha. This group developed into language or communicative stones known as Ogham stones. Examples can be seen at Killaloe, Co. Clare, and Killeecormac, Co. Kildare. We can see from these examples of stone structures the importance of these arrangements to us. Their visual impact and underlying knowledge is outstanding. It becomes an important clue to the understanding of what aesthetic values these people had. These values,which can be seen within the structures, are worth looking at. From them we can trace our backgrounds and obtain from them what has been lost to us in modern times. There must have been a vast

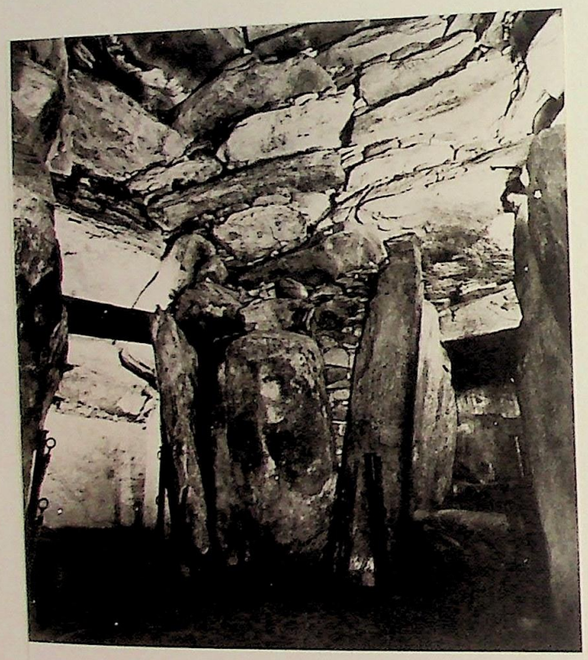


(Fig.45)

(Fig.46) See(Fig. 40) on page 28.



(Fig.47) Petroglyph, Derrynablaha, Co Kerry.



(Fig.48)

underlying culture which became the source for all these arrangements to have been erected. This culture must have had mass control of its peoples and a uniformity of belief for such feats to have been achieved.

For us,in modern times,they possess a vast impact of strength and after the experience of any one complex, we inherit both a sense of awe and a real idea of what idols these people must have had. In the later chapters we traced the underlying forms of these arrangements.

It is almost certain that these complexes are vast achievements for that time. They hold within them artistic teachings for its participants. One must experience them to gain the underlying effects that they emit. These experiences, although small, lead to the understanding of its culture, which still remains within the structures long after its builders are forgotten. Only their monumental structures survive for us to examine and learn from.

Even if one looks without examination, one can learn from what they see. Participation is the complete knowledge of what its function is. These buildings contain elements of design both in the buildings themselves and in the decoration to be seen on the surfaces ofthe stones. These surface carvings as in Newgrange (Fig. 45) or in other types such as at Staigue Bridge (Fig. 46) or Derrynablaha in Co. Kerry (Fig. 47), show their capacity as carvers. They also show carved messages with hidden meanings, as in Newgrange,or as decorated memorial sites, as in Derrynablaha (Fig. 47). Their buried remains found within some of the structures as in Fourknocks in Meath (Fig. 17) give us clues about the people themselves, as well

as their methods of construction of buildings. Nobody can argue but that they were most certainly a knowledgeable people of both building construction and astronomy. For, looking at some of the complexes, we can see these features within (Fig. 48). In some cases the constructions were complicated as at Fourknocks, or a simple arrangement, as at Proleek. Both types of structures hold within them a sculptural quality and magnificence which is hard to recreate. Furthermore, the study of these structures becomes the study of the underlying culture one must admire for its achievements. They were not primitive nor were they barbaric or ignorant as their lifestyle suggests or as we once supposed. These structures represented a sophisticated way of communication and a reference to many idols within their culture,burial, the calculation of time, memorial, signals or decorative ornamentation. All these characteristics can be seen in the development of these arrangements within the stone structures of our Neolithic times. These structures also contain meanings which represent some significant moments in their lifestyle, communication with the world of spirits and a connective force between life and death. These hidden meanings cannot be translated into our own language. One must experience the structures in order to appreciate some of the values which these structures hold within. These values will some day be revealed to us.

Finally, one must say that these standing monuments add to the landscape and do not take away. Because of their shape size and placement obviously mean that their builders meant

that they were to be taken note of and this is certainly true, for many structures have outlived their builders thousands of years and stand without movement in their original place. Sacred and holy, they remain, their purpose yet to be revealed. We seek in many ways to understand them by applying rules to each one to find their hidden meanings, but we are only working backwards to unknown facts. Some findings are obvious, others are not. One thing is certain - they are big, impressive and are meant to be important. They were meant to survive. Time stands still within these monuments, for it was time that it took to put them in place. They hold within sophisticated visions of life and death and the passage of time. These people were not mere star gazers but were interested in the fundamental questions as to the nature and origins of ourselves and our universe.

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