From Banks and Ditches

to Dowsing

Two-Dimensional Geometry

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Pre-amble and Abstract

The UK has numerous Stone Age and Bronze Age sites surrounded by substantial banks and ditches, many of which contain megaliths. The perceived benefits from sites of this type of construction must have been considerable to motivate the relevant population to undertake these vast "civil engineering projects". These benefits not only included a physical defence barrier, but a "spiritual" and "earth energies" barrier, (the subject of this article), that the mainly rural population could sense and associate with improved crop cultivation, fertility, protection, priest power, etc.

This paper details the author's original research into banks and ditches, driven by the fact that they produce a plethora of patterns detectable by dowsing, which are some of the most comprehensive, complex, and interesting in the study of "earth energies" and dowsing. It is shown that these patterns are not caused by the megaliths associated with some of these ancient sites, nor were the banks and ditches built just for for physical defence. This dowsable phenomenon also warrants further investigation, as experiments and meticulous measurements by the author leads to many remarkable insights, which initially seem unconnected. Most surprising is that a small simple 2-dimensional geometric curve, such as drawn on paper, can produce identical effects as those obtained when dowsing a large 3-dimensional structure. This discovery, in turn, has been used to study the reasons for the well known, but unexplained, variability of measurements when dowsing "earth energies". Significant quantified results show how the variations are due to astronomical, seasonal, lunar month, tidal, and daily factors. Exciting conclusions lead to such concepts as the role of geometry in consciousness; the interaction of mind and matter; demonstrations of universal scalar theory; and both gravity and magnetism are factors when measuring some dowsable fields. Original formulae are discovered which lead to good predictions. These involve the universal golden ratio phi (φ), as well as integer ratios.

Acknowledgements

Acknowledgements are due to the UK Dowsing Research Group (DRG) members who assisted in this avenue of research, and following their enthusiastic review of the author's lectures, encouraged its documentation. In particular, recognition is due to Jim Lyons for his suggestions, and identifying some of the mathematical ratios.

A summary of the papers presented to the Dowsing Research Group is set out below, including the observations and results of relevant experiments undertaken by the author, and repeated by several members of the DRG. Also incorporated is the feed back of discussions and comments within the DRG.

Protocol and Methodology

"Earth Energies" are naturally occurring subtle energy fields, the nature of which are currently being researched, and are the subject of this article. They emanate not only from the earth's topological or subterranean features, but as will be demonstrated, even from cosmic sources. These fields usually comprise lines and patterns, which can be detected by dowsing. Dowsing and associated intuitive techniques fall into several different categories. Some gifted people are able to visualise "earth energies" or "subtle energies" without the use of devices. Other device less dowsers feel a positive sensation in their mind's eye, throat, solar plexus, or fingers. Most dowsers need a rod, pendulum, or other device to amplify the dowsing sensation. The research for this article was undertaken with angle rods because the author feels they react quickly, respond accurately to boundaries, indicate the direction of flow of the subtle energies being dowsed, and are easy to use on-site, even in the wind or rain.

As always, specifying the protocol and the actual dowsing question is key. To minimise errors, the tape measures used in the experiments were adjacent to the perceived line being investigated thereby avoiding parallax. Once an initial measurement had been made, it was then fine tuned using device less dowsing by moving a sharp pointer adjacent to the tape measure to obtain an accuracy of about 2mm. Only one person dowsed at a time to avoid cross-contamination of information. The intent of each dowser also included the elimination of interactions from all other dowsers, as well as mentally erasing all previous dowsing results produced by themselves or other people. Finally, intent had to be "now" to avoid time errors. Recording time and date is essential to allow for known lunar and other astronomical perturbations.

Qualitative Observations

This introductory section is a general overview of the "earth energies" associated with banks and ditches. A typical example of the latter is the photograph in Figure 1 is a photograph of part of the Double Dykes at Hengistbury Head, Bournemouth, Dorset, UK. As well as it being the nearest ancient site to where the author lives, and hence conveniently situated, it does not have associated megaliths, nor has it the usual torroidal shape, but comprises linear earthworks. This has a great advantage for research, as it eliminates these two variables (megaliths and tori). As will be seen, these two factors, fortuitously, are not greatly significant to the findings in this paper, so Hengistbury Head allows other more important factors to be isolated. Dowsing at Hengistbury Head by the author over the last 10 years inspired this research, and it provides the ideal location to revisit continuously, in order to test theories on-site. It is important to realise that the findings in this paper are the same as at other sites in the UK, including Avebury, Stonehenge, Badbury Rings, Maiden Castle, and indeed any other ancient sites with banks and ditches, as observed by the author, members of the Dowsing Research Group (DRG), and Wessex Dowsers, amongst others.

HENGISTBURY HEAD

Figure 1

Dowsing and associated intuitive techniques fall into several different categories. Some gifted people are able to visualise "earth energies" without the use of devices. Other deviceless dowsers feel a positive sensation in their mind's eye, throat, solar plexus, or fingers. Most dowsers need a rod, pendulum, or other device to amplify the dowsing sensation. The research for this article was undertaken with angle rods because the author feels they react quickly, respond accurately to boundaries, indicate the direction of flow of the subtle energies being dowsed, and are easy to use on-site, even in the wind. Fine-tuning of measurements involved the use of deviceless dowsing with a sharp pointer adjusted to the precise position on the tape measure being used.

Having obtained detailed on-site measurements from numerous banks and ditches, including those mentioned above, research evolved to smaller laboratory experiments using sand, plastic profles, and other materials to simulate banks and ditches of different sizes. This allowed physical parameters to be varied scientifically. In all cases, the same dowsable patterns were obtained. A number of independent researchers have confirmed the results.

In general, the dowsable pattern comprises 17 different lines, cylinders, and numerous spirals, which fall into 4 different categories, each with differing properties. Figure 2 is a representation of the complex dowsable fields that are produced by banks and ditches, the latter being depicted as the two parallel objects having equal lengths, at the centre of

Figure 2. In order to help simplify comprehension, the following explanation discusses, in turn, each of the four types of fields that are found.

THE DOWSABLE FIELDS PRODUCED BY BANKS AND DITCHES

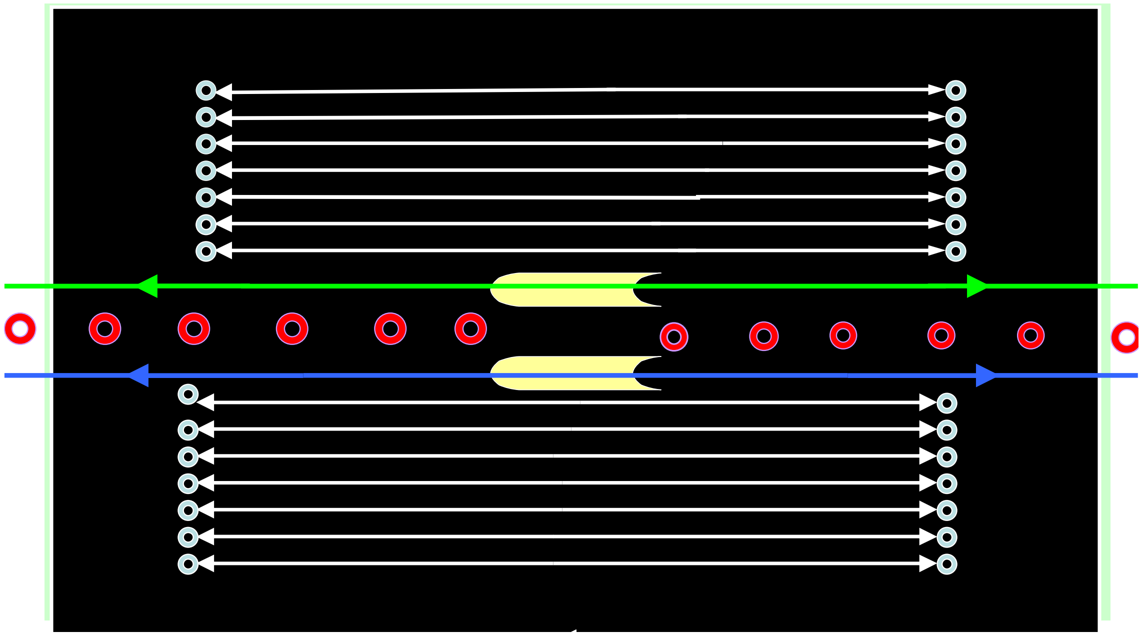


Figure 2

Type 1 Fields

As can be seen in Figure 2, there are two groups of seven lines, making 14 in total. These 14 lines are parallel to the two banks. One group of these seven lines is to the right of one bank, whilst the other group is to the left of the other bank. Each line has a perceived outward flow, but it is debateable what this "flow" actually represents, although it could be a potential difference rather than a flow. The length of these lines is variable, and mainly depends on the separation distance between the banks. Typically, these lines have a length of between 5 and 40 metres, measured from the end of the banks. As often in earth energies, each line ends in a clock-wise spiral.

The two groups of seven lines, as measured on the ground, are, in fact, seven concentric cylinders. The dowser, walking along the ground, initially only detects dowsable points where the cylinders meet the ground. This he then perceives, after following these dowsable points around the site, as two sets of seven lines. Subsequent realisation of the three dimensional geometry follows from further research, and leads to Figure 3, which illustrates this effect.

A more advanced feature of these lines is that they give a white reading on a Mager disc, as do the associated terminal spirals. However, as discussed later, it is not clear what this perceived colour represents. Some of the characteristics of these Type 1 lines are summarised in Figure 4.

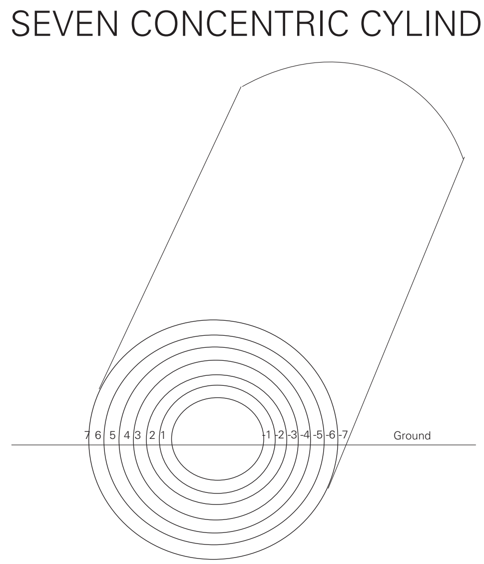


Figure 3

Type 2 Fields

Type 2 lines have very different properties to the Type 1 lines. A Type 2 line runs along the top of the eastern most bank. This mainly applies where the two banks have equal heights and widths, but a slight displacement in location occurs with asymmetrical banks. This Type 2 line extends outwards from both ends of the bank. Measured from either end of the banks, its length is greater than 100 metres in both directions. However, it is difficult to measure distances greater than hundreds of metres whilst keeping focused on the dowsable object. Possibly, this line is perceived to extend to infinity, but it is obviously impossible to prove this statement. The Type 2 line also has an outward perceived flow in both directions.

These Type 2 lines produce a green reading on a Mager disc, and have a rectangular cross-section. In general, the size of the Type 2 dowsable field increases as the size of the banks and their separation increases. Typically, the dimensions for the Type 2 fields range from a height above the bank of between 0.5 to 2.8 metres, with a width of 0.04 to 1.5 metres. Figure 4 shows some of the characteristics of these Type 2 fields.

Type 3 Fields

Unlike the previously described Type 1 and Type 2 lines, the Type 3 field is not a line but a series of spirals running along the bottom of the ditch, with a void between each one. These spirals extend outwards from both sides of the ditch in an apparent straight line. The length of the Type 3 line is also greater than 100 metres in both directions and the same qualification applies as for the Type 2 lines above.

Viewed downwards, these Archimedean (equally spaced) spirals turn clockwise, and form an arithmetic progression, with a separation distance between adjacent spirals of about 1 to 65 metres, depending on the size of the banks. Similar to the Type 2 lines, the locations of the Type 3 spirals are slightly amended if the heights and widths of the banks are not equal.

THE COLOURS, SHAPES, AND LOCATIONS OF THE LINES

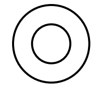
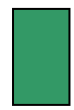
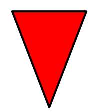
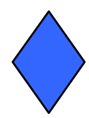
Field Type	**Location**	**Colour**	**Cross-Section**	**Shape of Cross-Section**	**Dimensions of Width & Height** metres	**Length** metres
Type 1	Either side of banks & ditches	White	Concentric cylinders		Radii 0.1- 50, with axis along ditch	5 - 40
Type 2	Above easterly bank	Green	Rectangular		Height above ground 0.5 - 2.8 Width 0.04 - 1.5	100+
Type 3	Along ditch	Red	Inverted conical helix		Height above ground 0.3 - 1.4 Diameter of base 1 – 2	100+ Separa tion 1 - 65
Type 4	Above westerly bank	Blue	Diamond		Height above ground 1.6 – 21 Width 0.40 – 2	100+

Figure 4

These Type 3 lines produce an indication on a Mager disc, of the colour red. The geometry of each spiral may be described as a pair of inverted conical helices, reflected at their apex. A further level of complexity is that each of the "spirals" comprises 7 pairs of inverted conical helices stacked vertically. As before, the dimensions of these spirals are greater for larger banks, with the largest conical envelopes having a base diameter of about 2 metres. Some of the characteristics of the Type 3 fields are summarised in Figure 4.

Type 4 Fields

The fourth distinctive type of dowsable field runs along the top of the western most bank. It extends outwards from both sides of the bank, and as for the Types 2 and 3 lines above, has a length greater than 100 metres measured in both directions from the ends of the banks. This Type 4 line has a perceived outward flow, and gives an indication on a Mager disc, of the colour blue. It has a diamond shaped cross-section. In general, as above, the sizes of the cross-section increase as the size of the banks, and their separation increases. Typically, the dimensions for Type 4 fields range from a height above the bank of between 1.6 to 21 metres, with a width of between 0.4 to 2 metres. Intriguingly, members of the DRG have reported basic telepathy when standing on these blue Type 4 fields. Some of the characteristics of the Type 4 fields can be seen in Figure 4.

Quantitative Observations

Moving on from the previous qualitative descriptions, to more detailed measurements, this section details some quantitative observations of existing structures, together with the results of experiments with smaller sized created banks. In order to simplify research, the following protocols have been adopted.

a. Banks and ditches have been replicated in laboratory conditions, using sand, wooden rods, or plastic . As will become apparent, this is a valid simplification.
b. For each experiment, as many variables as possible have been kept constant.
c. The overall width of the 14 Type 1 lines has been used as the main measure of the size of the dowsable field. This has many pragmatic advantages, as it is relatively easy to measure, and avoids measuring the length of lines greater than 100 metres. In fact, at torroidal shaped banks and ditches, the length of the lines is a meaningless concept because the observed lines are merely circumferences of the banks and ditches.
d. Exactly the same effects can be observed for linear banks and ditches as for torroidal banks and ditches, except the fields / lines are linear, not curved. Linear banks and ditches have therefore been studied as they are easier to measure and analyse.

As the two banks are separated from each other under different conditions, the following series of graphs indicates what happens.

Width of the 14 Lines
The graph in Figure 5 shows how the width of the total Type 1 dowsable field at ground level (i.e. the diameter of the outer cylinder), varies as the banks are separated. In this case, the height and width of the banks were kept constant; the height of the banks being 30mm, and their width 85mm. It is immediately apparent that there is a reduction in the width of the Type 1 field as the banks are separated, followed by a sudden disappearance of all dowsable fields at the maximum separation distance of between 300-350 mm.

For this size of banks, the overall width of the 14 lines reaches a maximum size of about 10m and occurs at the optimum separation between the peaks of these two banks, which is approximately 150mm at full moon. It is of interest to note that the ratio of the maximum separation distance (300mm), to the optimum separation distance (150mm) is approximately 2:1. This and other simple integer ratios seem to re-occur in these experiments.

As the banks have a width; it is impossible to have the separation distance between peaks less than this width. Hence, the blank left hand side of the graph in Figure 5. As usual in studying earth energies, the effect of the moon is significant. The upper graph relates to readings taken near full moon, whilst the lower is near new moon. This effect, which will be revisited later, can be significant, as the width is about 30% greater at full moon compared to new moon, at the optimum separation distance of 150 mm. There are probably other solar or cosmic perturbations, but these have not been explored here. At full moon, a good approximation to the curve is a polynomial relationship involving the power of 4.

SEPARATING 2 BANKS, BUT KEEPING THEIR HEIGHT AND WIDTH CONSTANT

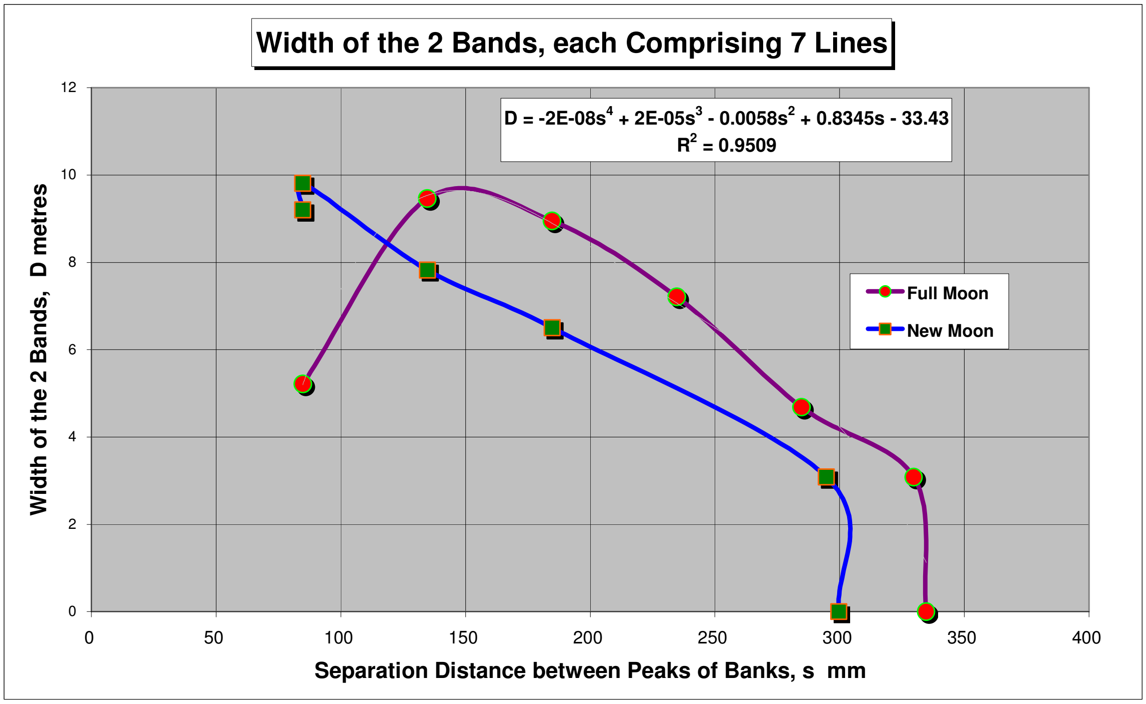


Figure 5

Figure 5 shows what happens when the height and width of the banks are kept constant. What happens when these are not constant? Figure 6 is a graphical representation for different sized banks and ditches ranging from large ancient banks and ditches measured in tens and hundreds of metres, down to millimetre-sized banks and ditches. The data samples chosen comprise different sized banks that have been separated so that they are near their optimum separation distance, in order to produce the maximum sized dowsable fields. This graph shows the variation in the sizes of the associated 14 Type 1 lines, and provides a first order approximation trend line. This leads to a power relationship between the width of the 14 lines and the separation distance between the peaks of the banks, raised to a power of 0.6121. As the graph has a logarithmic scale for each axis, this power relationship appears linear.

DIFFERENT SIZES OF BANKS AND DITCHES NEAR THEIR OPTIMUM SEPARATION

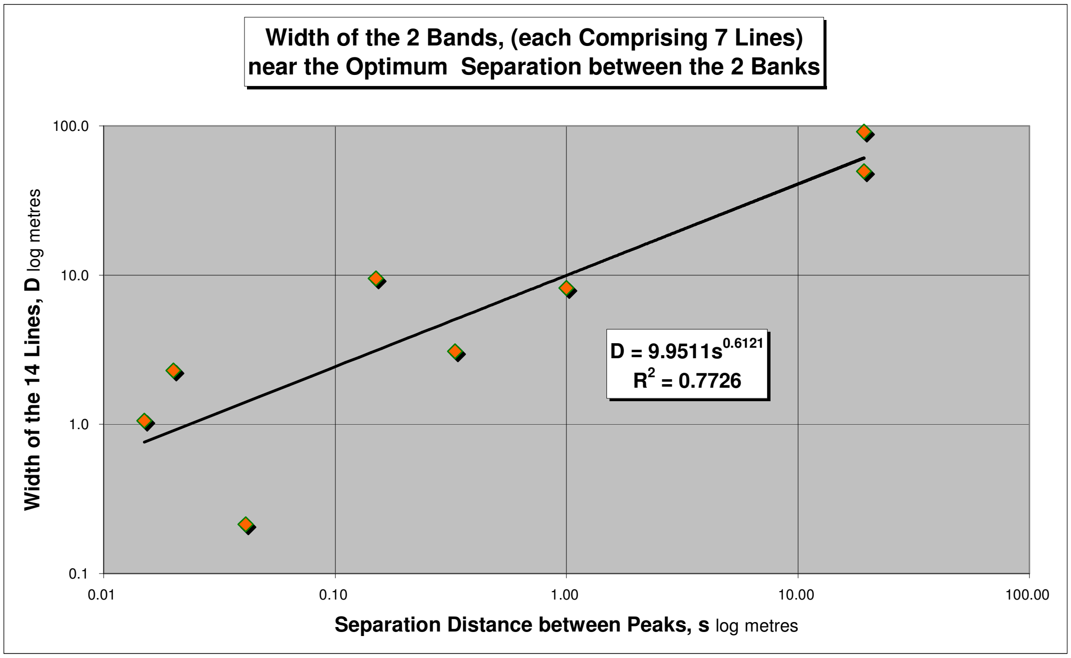


Figure 6

The Length of the Type 1 Lines

As the banks are separated, Figure 7 depicts graphically the experimental results of measuring the length of the Type 1 lines. The latter are measured from the end of a bank to the central axis of the spirals that terminate the lines. To keep things simple, the same two plastic profiles were used as previously, i.e. constant size banks with variable separation. The main observations are as follows:-

Unlike the previous graph, which depicted polynomial curves, the relationship between the separation distance and line length appears to be linear (with linear scaled axes). This linear inverse relationship has a high correlation coefficient of 0.981. The difference between Figures 5 and 7 suggests that there is a different mechanism involved in producing the length of the cylinders as opposed to their diameter. This unexpected and exciting observation is examined in more detail in Part 2 of this article.

Lines disappear at the same maximum separation as the previous graph in Figure 5 – about 330mm separation in this example. Within experimental error, there would appear to be symmetry between the east and west bands, as well as the north and south bands. When the banks are as close together as possible (84.75 mm in this experiment), the length of the lines are at their maximum, which is about 10 metres from the end of each bank, decreasing to zero as the separation distance of the 2 banks approaches 329.75 mm.

SEPARATING TWO BANKS, BUT KEEPING THEIR HEIGHT AND WIDTH CONSTANT

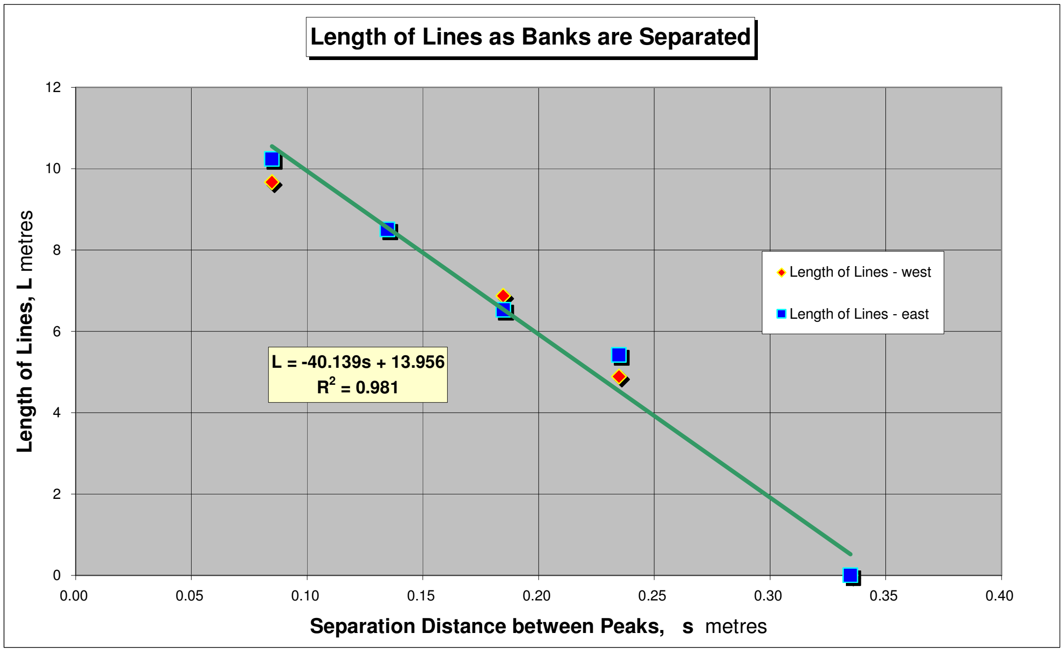


Figure 7

These results do not apply to Types 2, 3, or 4 dowsable fields, which, as discussed earlier, all appear to extend towards infinity for bank separation distances less than 329.75 mm. However, as before, they suddenly disappear when the bank separation is greater than 329.75 mm for the size of banks and ditch used in this experiment.

In the previous graph, depicted in Figure 7, the size of the banks was kept constant whilst they were being separated. The graph in Figure 8 relates to different sized banks in the range from large banks in ancient sites (measured in tens and hundreds of metres); down to small (millimetre sized) banks and ditches. Figure 8 graphically illustrates that the length of these Type 1 lines (i.e. the cylinder length) can increase from less than 5 metres (for small laboratory models) to over 40 metres, as the two banks become further apart. The main observation is that there appears to be a trend line, suggesting an equation having a power relationship between the line length and the separation distance between the peaks of the banks, raised to a power of 0.2763. As the graph has a logarithmic scale for each axis, this power relationship appears linear.

LINE LENGTH FOR ANY SIZED BANKS AND DITCH NEAR THEIR OPTIMUM SEPARATION DISTANCE

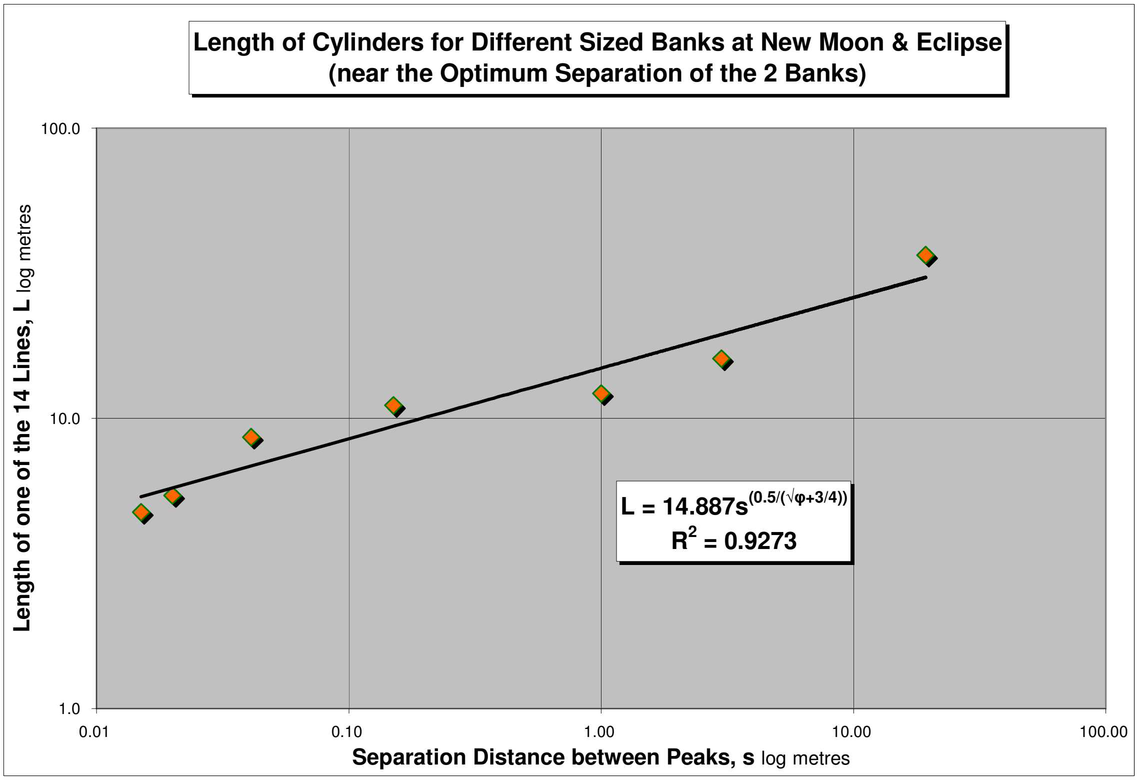


Figure 8

The Gap between each of the Type 1 Lines

The graph in Figure 9 shows the results of measuring the distance between **adjacent** Type 1 lines (unlike the total width of previous experiments). As before, to keep things simple this experiment was with two identical plastic profiles. i.e. constant sizes banks with variable separation. It was observed that there is a maximum gap of about 0.7 metres between adjacent lines at the optimum separation of the two banks, which is about 150 mm, peak to peak. This gap suddenly tends to zero when the separation is greater than 329.75 mm. This is consistent with the previous findings that all dowsable fields collapse when the separation distance of the peaks exceeds 329.75 mm for these sized banks. For greater separations, there are no dowsable fields.

There is a slight asymmetry in the separation distances between the group of seven lines on the east of the banks, and the other group of seven lines to the west. This may be connected to the drift to the west observed a few years ago for mind-generated fields. (See Reference 28 page 25). Once again, there is a polynomial relationship involving the separation distance of the peaks raised to the power of 4. For each separation distance, the gaps between adjacent lines are approximately equal.

SEPARATING TWO BANKS, BUT KEEPING THEIR HEIGHT AND WIDTH CONSTANT

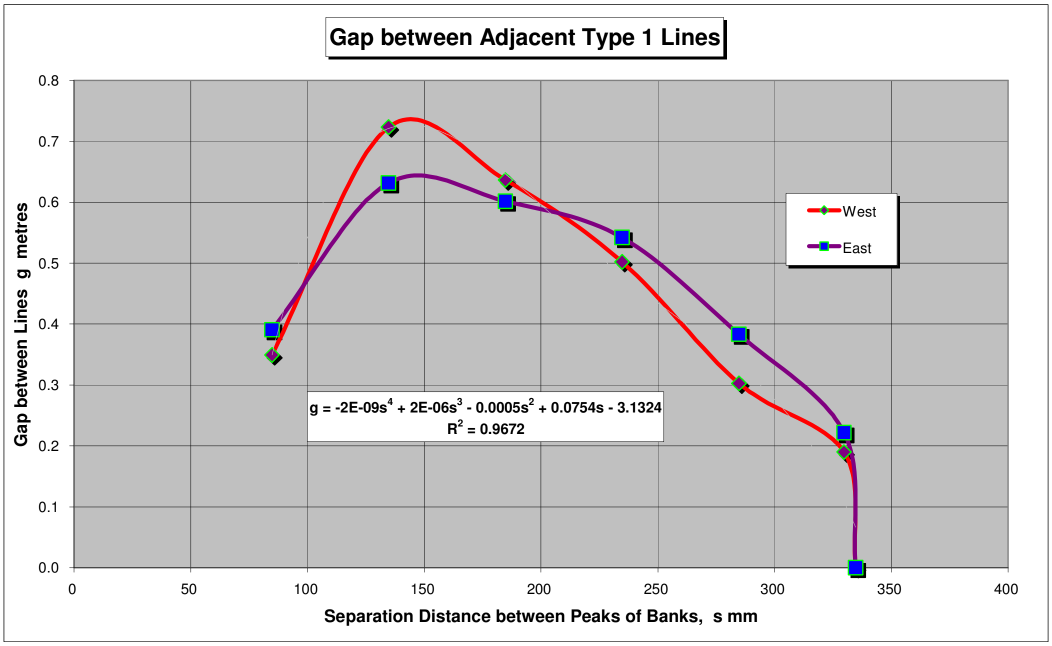


Figure 9

The Gap between the Two Sets of 7 Lines

This section examines the gap between the two sets of seven lines, as the banks are separated. As before, two plastic profiles simulating constant sizes banks were used. Figure 10 graphically shows the results of the main observations, which include a maximum gap of about 1.5 metres between the two sets of seven lines. This occurs at the optimum separation between the two banks, when they are about 150 mm apart. As expected, the gap suddenly tends to zero when the separation is greater than 329.75 mm for these sized banks. This signifies the maximum separation, after which no dowsable fields appear. This maximum gap of 1.5 metres in Figure 10 is approximately double the maximum gap of 0.7 metres between adjacent pairs of the seven lines, as illustrated in Figure 9: another example of a 2:1 ratio. Once again, there is a polynomial relationship involving the separation distance of the peaks, raised to the power of 4.

Height of Banks

Most of the discussion so far has been on horizontal separation. Preliminary work shows that as one bank is raised vertically higher than the other, the dowsable fields reduce; too high and the entire pattern suddenly disappears. The effects are similar to moving the banks apart horizontally.

Length of Banks
When varying the physical length of the banks between 0.5m and 2m, there does not appear to be any observable effect on the dowsable fields. Extrapolating from Figures 5 to 10 and physical observation leads to the important conclusion that the length of the bank is irrelevant.

SEPARATING TWO BANKS, BUT KEEPING THEIR HEIGHT AND WIDTH CONSTANT

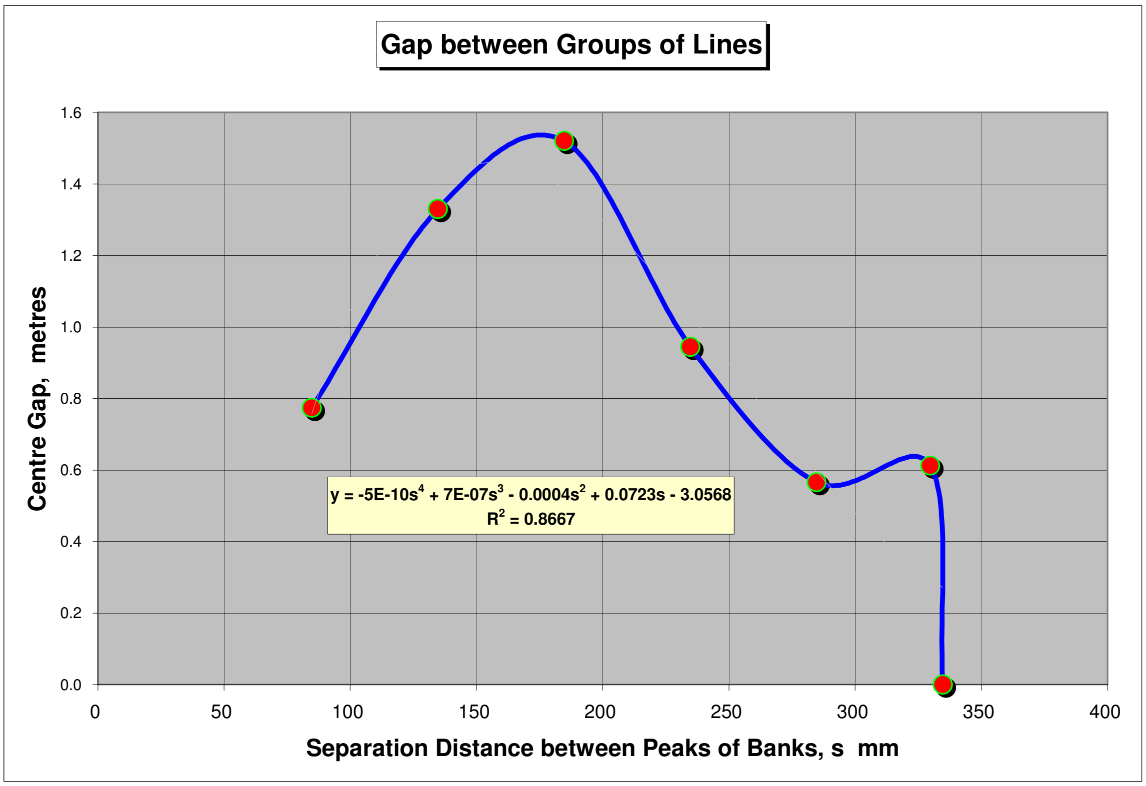


Figure 10

Analysis

This section analyses the variables involved in the experiments that produced the above findings, starting by extracting those factors, which are **not** involved.

Factors not Involved
Originally, the author, in common with other people, thought that the effects described in this paper were related to the megaliths forming part of ancient sites. However, ancient sites such as Maiden Castle, Badbury Rings, Basing Castle, and many others have the same effects, but no stones are present, only banks and ditches. Torus shaped banks and ditches such as at Stonehenge or Avebury was the next factor thought to be producing these effects. However, Hengistbury Head is not a torus, but produces identical effects.

Many researchers have claimed that chalk is a significant factor. As experiments using banks and ditches made of sand give identical results, chalk must be irrelevant. An alternative explanation is that ancient sites are relevant. However, wind-blown sand dunes, for example, on a beach in the south of Spain, or on the north coast of Venezuela, produce an identical effect. Although many people have believed that silica/sand is an important component of dowsing earth energies, the fact that plastic produces identical effects suggests silica in this context is irrelevant.

Some people have claimed that the angles of the slopes are relevant. These may have a minor effect, but it has not been observed from these experiments. In measuring earth energies and auras associated with megaliths and crystals, there is a high correlation to the mass of the source object and the range of its aura. (See reference 30 page 4). This led the author originally to believe that the mass of the banks was the main cause of the associated dowsable fields. However, from the experiments discussed in this paper, mass seems to be an irrelevant factor. Finally, although intuition may suggest that the length of the banks and ditches is important, experiments have proven otherwise, and length is therefore irrelevant.

Factors that may be Involved

We now know what is **not** involved. What about something positive? Measurements and experiments suggest that the major factors are:-

a. The **Width** of the banks
b. The **Height** of banks above ground level
c. The **Separation** distance between the two banks

All of these relate to geometry, nothing else seems significant. Of these three factors, separation seems to be the most important, with width and height being the physical means of achieving large separations.

2-Dimensional Geometry

Paper Doodles

As mass and length are not involved, this research has led to the exciting conclusion that dowsing a 2-dimensional curve, representing a vertical cross-section through two asymmetrical banks and a ditch, (such as that drawn on a sheet of A4 paper, or chalk on a wall) provides exactly the same results as dowsing on-site. After allowing for the different scales, the pattern is identical to on-site dowsing; whether it is at ancient banks and ditches exactly the same as, for example, at Hengistbury Head, or with smaller scale "laboratory" experiments.

Figure 11 contains a 2-dimensional curve, representing a vertical cross-section of two asymmetrical banks and a ditch, drawn on a sheet of A4 paper, or for larger curves, even using chalk to draw profiles on a wall. Also superimposed in Figure 11 are the results of dowsing this 2-dimensional curve. One objective is to test if the dowsing observations are the same as for physical banks. Another objective is to see if the results are consistent for the smallest sized banks and ditches as well as the largest. A spin off is that by undertaking small size experiments that involve in-door measurements on a desk, it avoids the vagaries of the weather, the lengthy time involved, and the complexity of making suitable on-site observations.

As the heights of the banks in the Figure 11 doodle are unequal, Type 2 and Type 3 lines are produced in slightly different places, compared to Figure 2, which related to equal sized banks. The Type 2 line has "slipped" from the top of the right hand peak to half way up the adjacent peak, whilst the Type 3 line has moved from the bottom of the ditch to the peak of the right hand bank.

DOWSING A PAPER DOODLE OF BANKS AND DITCHES

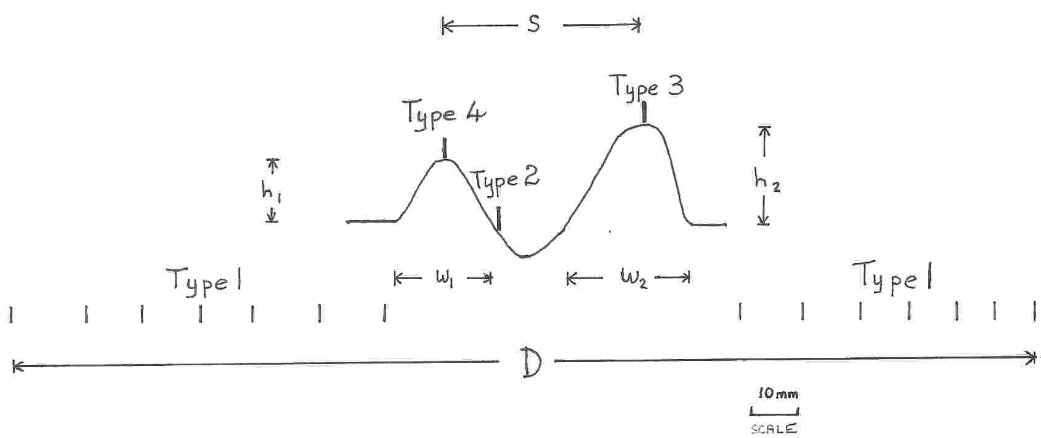


Figure 11

After allowing for different scales, the exciting results of dowsing 2 dimensional geometry is that it produces identical results to on-site dowsing of physical banks and ditches. It is also reassuring that the findings are exactly the same as, for example, at Hengistbury Head, even to the detail of the displaced Type 2 and Type 3 lines being in similar positions.

Mind-Matter

The author originally thought what was being experienced comprised:-

Mass	33%
Geometry	33%
Mind	33%

After the thin plastic profile experiments it seems to be more like:-

Mass	10%
Geometry	45%
Mind	45%

However, as we have seen, just drawing a cross-section of two banks and a ditch, (on a sheet of paper or wall) dowses exactly the same as being on site. This suggests the following type of mind-matter model is involved in producing the dowsing mechanism:-

Mass	0%
Geometry	10%
Mind	90%

These numbers do not related to any specific physical measures, but as a result of this research are purely subjective to illustrate the relative emphasis of the factors involved.

Interpretation

This section attempts to interpret some of the above findings, and highlights some of the key concepts.

One possibility is that the above dowsable fields are only an **illusion** in the dowsers mind. This is unlikely as other dowsers obtain the same effects. Alternatively, when dowsing two-dimensional geometry, is the dowser just **remembering** what was found when dowsing on-site at, say, Avebury, Maiden Castle, Hengistbury Head, etc? In other words, is this an example of **map dowsing**? It is debateable if these 2-D doodles are the same as map dowsing. The latter links the dowser to remote locations, and gives dowsing responses as if the dowser was physically at the map's location. This is unlike the experiments discussed here where the observer is dowsing local geometry. For the same reason, it is debateable if these 2-dimensional doodles are the same as **remote dowsing**. This is also unlikely, as the results are scaled down, and vary consistently as the geometry changes. The results seem genuine and relevant to **local**, not remote, experiments and variations.

It has been known for some time that one can ask a dowsing question so that the results of measurements are scaled up or down. As identical, pro rata, effects are produced from the smallest scale to the largest; the results discussed in this paper take the concept of dowsing two dimensional geometry one stage further, in that they support scalar theory. This is important when considering how the mind interacts with the Information Field.

It has long been known that geometry is an important factor in dowsing. One of the front-runners in explaining how dowsing works is the Information Field. The findings in this paper suggest the question; "Is a simple geometric shape enough for the mind to interface with the Information Field?" If so, the implication would be that a macro geometric shape is reproduced at the micro/quantum level of the Information Field. Fractal, or self-replicating geometry, could be a relevant analogy, such as pentagrams / pentagons ever decreasing inside each other, like a set of Russian dolls.

These results may possibly support a hologram theory of the universe. The reasoning is that all parts of a hologram contain the "total" image. Dowsing in 2-dimensions appears to produce the same results as dowsing in our 3-dimensional world. Similarly, is our perceived world (i.e. 3 space dimensions + time), really a 4-dimensional hologram in a 5-dimensional universe?

If one adopts the Information Field concept, one possible challenge in interpreting the above experiments is that the original dowser's perception of his dowsing may have been incorrect, and in the process, inadvertently inserted erroneous information into the Information Field. If so, other people would pick up this incorrect information, but believe they were correct. However, this state only reflects what has always happened when establishing accepted new scientific theories, which give better results than the old ones being replaced.

Some researchers, in an attempt to explain the lines and cylinders generated by the two banks, have adopted analogies within other branches of physics. For example, the two banks and lines could be likened to the twin slot interference fringe model. Initial considerations seem promising because the greater the spacing between the slits, the smaller the spacing between the interference fringes/patterns. In other words, as the banks separate, the Type 1 lines become closer together. However, in Figures 9 and 10 this only occurs **after** the curve has reached its maximum. Prior to that, the reverse is observed. Other analogies include antenna design for electromagnetic radiation, or the effects of dipoles. Another interesting analogy is to Cassini Ovals. However, the author is not comfortable with these analogies because they do not seem to provide answers to the following observations.

Why seven lines? The number 7 is often found in life in general, as well as in dowsing in particular. Examples of the latter include the 7 chakras in animals, plants, and inanimate objects. Most dowsable spirals comprise two components each with 3.5 turns, therefore totalling 7. More correctly, these "spirals" have an envelope where the geometry comprises two conical helices reflected at their apexes. These "spirals" often comprise 7 of these conical helices stacked vertically. Another example of the number 7 is the well-documented phenomenon that megaliths are surrounded by a dowsable helix of 7 turns.

One possible connection is that the number 7 is the number of notes in an octave (in the doh, re, me music scale). The implication is that the basic music scale is fundamental in nature, not just to music. Taking this analogy further, the 7 lines (and chakra points) could be nodal points of standing waves.

Why a sudden cut-off of all dowsable fields at a certain separation distance between the two banks? Usually in physics, there is not a sudden change, but a gradual one, such as in gravitation or electromagnetic waves. This suggests that a non-classical, but quantum explanation may be required for the observations described in this article. Alternatively, pursuing the music analogy, standing waves in a box cut off suddenly when their wavelength becomes greater than the length of the box.

Several other observations require explanations. For example, why are there a plethora of Type 2, 3, 4 lines and vortices? Why are different colours associated with the different types of lines? These colours seem to be the same for big or small banks, and remain the same over several years. Continuing with the wave analogy, are the colours associated with the frequencies of the standing waves? If so, how are colours that are usually associated with electromagnetic waves related to the brain's interpretation of the colours of dowsable fields?

Another observation requiring an explanation is why the cross sections of the different types of lines have various geometrical shapes? These shapes are the same for big or small banks, and also remain the same over several years. One final obvious query is why some mathematical formulae are linear, some polynomials, whilst some are a power relationship. One inference is that different mechanisms are involved in producing the dowsable fields observed. This theme is developed in Part 2 of this paper.

Mathematical Summary

Definitions
This section defines the basic mathematical concepts that have been used in this paper. To assist comprehension, illustrated in Figure 11 are physical representations of some of these definitions.

s	The **separation** distance between the peaks of the two banks.
$\mathbf{S_0}$	The **optimum separation** distance between the peaks of the two banks that gives the maximum size of dowsable fields.
$\mathbf{S_{max}}$	The **maximum separation** distance between the peaks of the two banks giving dowsable fields. Greater separations do not produce dowsable fields.
D	The **distance** between the extremes of the 14 Type 1 lines, (i.e. the width of the Type 1 field at ground level, which is the same as the horizontal diameter of a vertical cross-section through the outer cylinder).
L	The **length** of a Type 1 line from the end of a bank to the centre of its associated termination spiral. This is the same as the length of the cylinder extending beyond the end of the bank. **L,** ignores the length of the part of the cylinder surrounding the two banks. To avoid confusion, the length of the **total** cylinder is **2 L + l,** where **l** is the arbitrary length of the two banks. The length of **l** is irrelevant and has no effect on the value of **L.**
$\mathbf{w_1}$	The **width** of the westerly bank at ground level.
$\mathbf{w_2}$	The **width** of the easterly bank at ground level.
$\mathbf{h_1}$	The **height** of the westerly bank above ground level.
$\mathbf{h_2}$	The **height** of the easterly bank above ground level.

Formulae and Projections
Analysing all the measurements from the experiments and observations discussed in this paper, identifies the following formulae and parameters required for banks and ditches to produce dowsable fields. The objective is to find empirical formulae that apply to ancient sites, laboratory experiments, and small 2-D doodles.

1. The separation distances between the 2 peaks, divided by the sum of the heights and widths of the banks, cannot be greater than 1.437 or less than 0.30

   $$\mathbf{0.30 \leq s / (h_1 + h_2 + w_1 + w_2) \leq 1.437} \qquad \textit{Equation 1}$$

   The right hand side of this equation reiterates that if the separation is too great, no dowsable fields are produced, whilst the left hand side states that it is physically difficult to have very large banks with a very small separation. However, the latter is re-visited in Part 2 of this paper.
2. The optimum configuration of two banks that produces the greatest dowsable field is where the previous ratio, in *Equation 1* equals 0.65.

   $$\mathbf{S_0 / (h_1 + h_2 + w_1 + w_2) = 0.65} \qquad \textit{Equation 2}$$

   Even after 3,000 years of erosion, it is gratifying to note that Hengistbury Head has a ratio of approximately 0.5. It also suggests that the builders understood about the optimum separation, even if they were not aware of the mathematics! The above formula, Equation *2,* is not sensitive to the effects of erosion because, as the height of the banks decreases from the effects of weathering, their width automatically increases from the washed down eroded material.

3. As a measure of the size of the dowsable field, **D** has been chosen as the main variable to predict, and is a function of the heights, widths, and separation of the banks. The structure of the generalised formula is:

   $$\mathbf{D = Fn(s, h, w)} \qquad \textit{Equation 3}$$

   The influence of **s,** is greater than **h,** and **w**. As will be seen in Part 2, other factors will be added to this basic equation.

4. As illustrated in Figure 5, the approximate formula for **D**, is:

   $$\mathbf{D = -2E\text{-}08s^4 + 2E\text{-}05s^3 - 0.0058s^2 + 0.8345s - 33.43}$$
   $$\mathbf{R^2 = 0.9509} \qquad \textit{Equation 4}$$

   This is a remarkably high correlation coefficient bearing in mind width and heights are not factors in this equation. However, this is very restricted, and only applies to specific sized plastic profiles. Although this formula initially appears to be very limited, it has important ramifications that are developed in Part 2.

5. As illustrated in Figure 6, the general formula for **D**, and **s**, the separation distance between the 2 banks for any size banks and ditches, near their optimum separation, is:

   $$\mathbf{D = 9.951s^{0.612}} \qquad \textit{Equation 5}$$
   $$\mathbf{R^2 = 0.7726}$$

This correlation coefficient is fairly good bearing in mind the accuracy of this formula is reduced because the data points in the graph are not the optimised separation distances between the peaks, and the effects of the widths and heights of the two banks have been ignored,

As illustrated in Figure 7, the approximate formula for **L**, is linear, of the form:

$$\mathbf{L = -40.139s + 13.956} \qquad \textit{Equation 6}$$
$$\mathbf{R^2 = 0.981}$$

Once again, this is restricted for the specific sized plastic profiles. However, it has an exceptionally high correlation coefficient which (a) shows the validity of keeping the width and height constant, and (b) is another suggestion that the widths and heights are not such important factors as the separation.

6. As illustrated in Figure 8, the general formula, **L**, for any size banks and ditches is of the form:-

$$\mathbf{L = 15.191s^{0.276}} \qquad \textit{Equation 7}$$
$$\mathbf{R^2 = 0.86}$$

Again, there is a remarkably high correlation coefficient as the separation distances are not optimised, and the effects of the widths and heights have been ignored.

Part 2- The Physical Limit

Introduction

Research for this paper evolved from large scale dowsing at ancient sites (having dimensions of 100's of metres), miniature banks and ditches built of sand, lengths of plastic piping having a profile of a bank, thin wooden rods, and 2-dimensional doodles on paper. This sequence has taken the dimensions down from 100's of metres to 10's of mm. The high correlation coefficients of the above empirical formulae, in spite of excluding the factors of height and width of the banks, suggests further experiments to investigate how these formulae respond to the ultimate limit of zero width and zero height, and hence to test their predictive ability. Up to now it has been assumed that the variable length of the lines depends mainly on the separation distance between the banks. No consideration was given to **who** made the measurements, and **when** the measurements were taken.

Relative not Absolute Measurements

It is well known that measurements made whilst dowsing are not absolute, like mass or length, but are relative and change over time, because of some of the following factors:-

- *The 24 hour cycle of the Earth's spin on its axis.*
- *The 28-day lunar cycle of the moon orbiting the Earth.*
- *The interaction of the above two factors to produce 2 (or in some locations, 4) tides per day.*
- *Seasonality, due to the tilt of the Earth's spin axis, to the plane of its orbit round the sun.*
- *The annual orbit of the Earth round the sun.*
- *Other planetary, solar, and cosmic influences.*
- *Possible physiological effects, e.g. tiredness, illness, medicines, alcohol.*
- *Personal interpretation of dowsing.*

The latter topic of personal interpretation, although a subject for another scientific paper, needs a brief explanation here in the context of measurement. Although two dowsers may obtain different values (possibly up to ±30% in certain cases), they will observe similar phenomenon, the same equations, identical exponents, and obtain the same ratios. Only the multiplying constants will differ. If the theory of the Information Field of dowsing is accepted, differences between observers could be attributed to converting the micro information in the Information Field, to macro geometry in the mind. One such factor could be quasi self-similarity as opposed to perfect fractal geometry, as the method of accessing the Information Field.

Although some people dismiss the benefits of dowsing because of the above effects, in reality, used effectively, they can be put to great benefit in the research into how dowsing works. For example, the following section makes a start in analysing how each of the above factors affects specific dowsable phenomena. As the interim findings in this paper have suggested that dowsing is mainly a function of consciousness and "is all in the mind", the approach adopted here is to highlight this fact by dowsing **non-physical** objects.

Further Experiments and the 2 line limit

Combining the above two concepts of relative measurements and non-physical sources leads to the following experiments. The logical micro non-physical limit can be reached by dowsing 2 parallel lines drawn on paper, thereby representing banks and ditches of zero height and width. This is illustrated in Figure 12. All physical variables have been eliminated. We are left with the mind's perception, consciousness, and intent.

DOWSING THE GEOMETRY OF TWO LINES

S_0 = 20mm

Figure 12

The interesting results are that the same dowsable patterns are still obtained as dowsing at ancient sites, except there is a small finite limit on the maximum separation of the two "banks" before all dowsable fields vanish. Height and width are needed to obtain separation greater than a few centimetres and still produce dowsable fields. For the initial part of the experiment, the 2 lines were gradually separated, and the diameter of the outer cylinder (i.e. the horizontal width) was measured to find the optimum separation distance, **S_0,** which in this case, equalled 20 mm, whilst the maximum separation distance, **S_{max}** equalled 40 mm. This is another example of a 2:1 ratio, again found in later sections of this paper. Although not affecting the conclusions of these experiments, further research is required as to why the values of 20mm and 40mm are obtained and whether this is personal.

The intention is to work down the list of relative factors mentioned earlier; starting with the moon. The experiment is to dowse the two lines, which as illustrated in Figure 12 were set at their optimum separation distance of 20 mm to obtain the greatest field size. This optimum separation objective maintains consistency with previous work and maximises accuracy. The length, width, and height of the dowsable Type 1 cylinders were measured on a daily basis over a lunar month, giving results that are shown as a graph in Figure 13.

Lunar Variations

The main obvious features in Figure 13 are that at full moon the readings are maxima, whilst at new moon they are minima. This ties up with the previous graph in Figure 5 that related to the separation of physical banks. The length of the dowsed cylinders fluctuates wildly with the position of the moon. Measured from the end of the lines (banks), the length drops from 6.30 metres at the first full moon down to only 28 mm at new moon. Less variation is observed with the other dimensions. The width (diameter) of the outer cylinder is also at a maximum at full moon, varying from 2.74 metres at first full moon to 1.07 metres at new moon. The height (radius) of the outer cylinder is also at a maximum at full moon, varying from 1.285 metres to 0.53 metres at new moon.

As is apparent from inspection, the second full moon has higher values than the first. The 21^{st} Dec was winter solstice, and this may be relevant and affect results. This is not immediately apparent, but will be revisited later.

THE MOON'S EFFECT ON DOWSING MEASUREMENTS

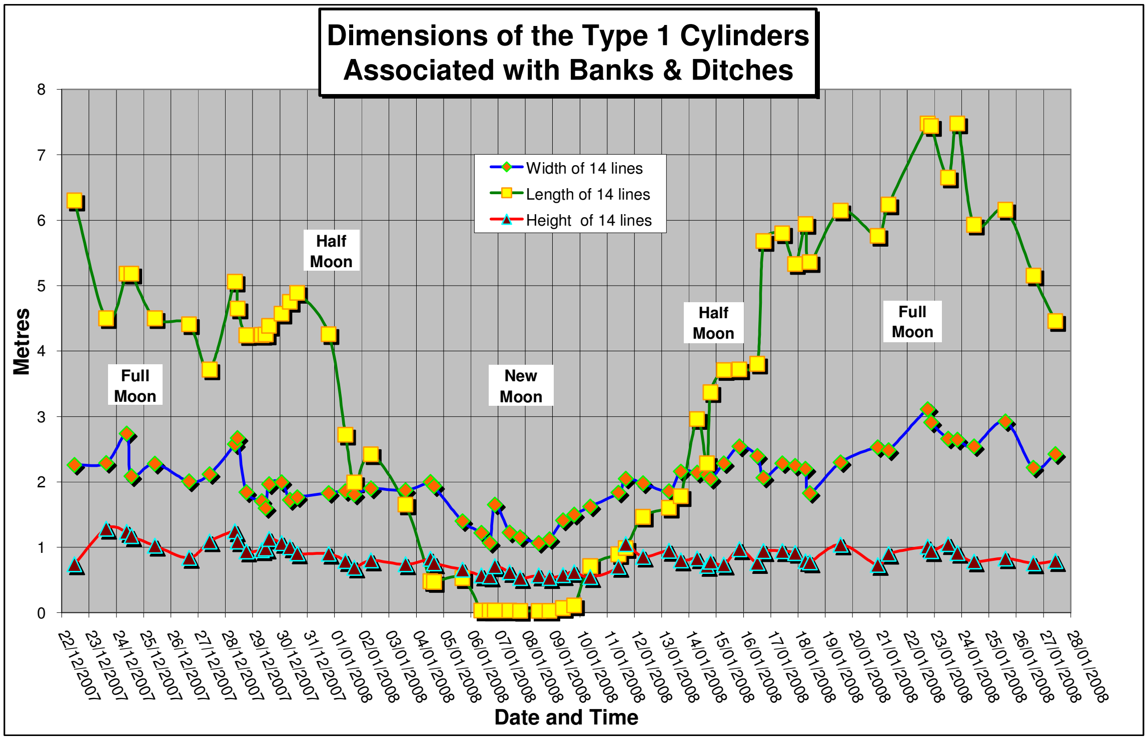


Figure 13

In summary, the above lunar variations are as follows

- The Length increases by about 225 times.
- The Width increases by about 2.561 times.
- The Height increases by about 2.425 times.

In an earlier section, it was suggested that the dowsing mechanism for producing the diameter of the cylinder was different from the mechanism producing the length of the cylinder. (The reason for the difference is that observations determined that the diameter has a power of 4 polynomial relationship to the bank's separation distance, whilst the length has a simple linear relationship.) The fact that over a lunar month the cylinder length increases 225 times, but the diameter only increases by 2.5 times, reinforces the fact that different mechanisms are involved for producing the length and diameter. If we are assuming the Information Field theory for the dowsing phenomenon, then this geometric asymmetry between two out of the three dimensions could be an intriguing clue as to how the Information Field interfaces with the macro world, and the mind in particular. This is taken up later.

The obvious analogy to the results shown in Figure 13 is the lunar effect on the earth's tides. At full moon, the earth is between the moon and the sun, as depicted in Figure 14. At new moon, the moon is between the earth and the sun as in Figure 15.

FULL MOON

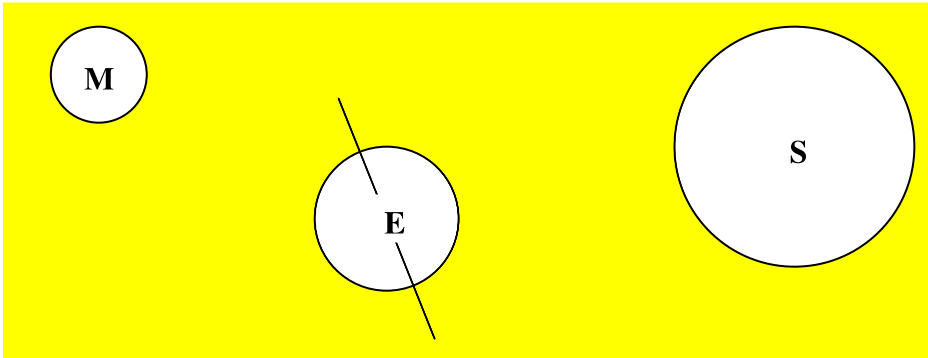


Figure 14

However, a glance at tide tables shows that maximum tidal ranges (spring tides) occur one or two days after full moon **as well as at** new moon. Neap tides (the lowest tidal range) occur one or two days after half moon. This is different to the results depicted in Figure 13. The mechanism, which produces the observed changes in the dimensions of the dowsable cylinders, cannot therefore be caused by the earth's tides. Nor can it be caused by a direct gravitational effect, as unlike the oceans and their tides, no mass is involved in the two lines on paper being dowsed!

NEW MOON

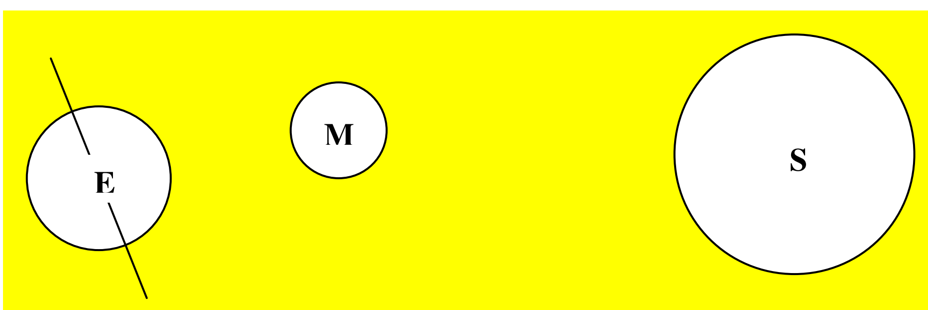


Figure 15

It would seem that the results in Figure 13 are not an indirect effect of tides but caused **directly** by the moon's gravity. This could either cause a psychological effect on the human brain, or on the storage of relevant information within the Information Field, or the mind's access to it. Using the terminology of General Relativity, it is postulated that "the fabric of the universe" (i.e. the Information Field) "is distorted by the moon's mass and gravitation", and this suggests a mechanism for the findings depicted in Figure 13. The combined gravitational pull, by the sun and moon, on a point on the earth is greater in Figure 15, (new moon) than at full moon as shown in Figure 14. The implication is that a less stressed Information Field at full moon produces a larger length cylinder than at new moon when it is more stressed. It is interesting to note that only dimensions, not angles are affected by this variability.

If the latter is true, this type of experiment with 2-dimensional geometry could lead to an understanding of the structure of the Information Field analogous to x-ray crystallography. This leads to the obvious question, raised in the previous section, as to why a less stressed Information Field produces a cylinder length 225 times greater than when more stressed, and why the width and height of the cylinders are only increased by about 2.5 times? Simplistic logic, (ignoring the effects of the earth's spin on its axis and its rotation around the sun) suggests that the greatest distortion of the Information Field caused by the combined gravity of the moon and sun would be in a vertical direction, and hence the variation in the **height** of the cylinders over a lunar month would be greater than the variation in their horizontal **length**.

Intriguingly, if the banks or the simulating lines are rotated in any physical orientation in a horizontal plane, **L**, the cylinder length, remains the same. This may suggest that if the cylinder is caused by interaction of the two banks with the Information Field the latter has the same properties in all directions. The geometry of the cylinder, as perceived on earth by the dowser's mind, is both a function of the Information Field and gravity. There appears to be a missing mechanism whereby a vertical change in gravitational pull due to mass causes a horizontal effect only to the geometry of the axis of the cylinder. The obvious analogy is the direction of electron flow compared to the direction of the associated magnetic force.

Daily Fluctuations

The second factor causing relative results is due to daily fluctuations. Unlike the lunar pattern, there is not an obvious daily pattern to the fluctuations. For example, all three readings (of length, width, and height), are decreasing during the 28th January, but during the 30th of January, the three readings are increasing.

One of the largest daily variation occurred on 28 Jan 07, when the maximum variation in length of the Type 1 cylinders drops from 5.06 metres down to 4.24 metres. At the same time, the width (diameter) of the outer cylinder fluctuated on that date, varying from 2.67 metres to 1.845 metres, whilst the height (radius) of the outer cylinder varied from 1.245 metres to 0.934 metres on 28th Jan.

Table 1 below summarises the above daily variations.

Dimension	**% Increase**	**Daily Maximum/Minimum**	**Nearest Integer Ratios**
The Width	+44.7%	1.447	3/2 = 1.5
The Height	+33.3%.	1.330	4/3 = 1.33
The Length	+19.3%	1.193	5/4 = 1.25

Table 1

These are significant daily fluctuations. Is this a coincidence, or within experimental limitations and error, that these daily increases in dimensions are integer ratios to within 5%? It is unlikely that the three measurements made during the course of a day will include the maximum and minimum values for that day. In other words, the variation could be greater than these values

The daily variations seem more complex than those over the lunar month. Using the tidal analogy again, due to the effects of the earth's spin on its axis and its rotation around the sun, there are 2 high tides per day (and in some parts of the world, such as the Solent area where the experiments were performed, there are 4 tides per day). Further research is therefore needed to determine if this is a contributory cause of the daily fluctuations. An approach would be to produce graphs covering 24 hours, with hourly measurements, taken at new moon, full moon, and half moon.

Variations in the Cross-Section of the Cylinders

Not only do the length, width, and height vary over both the course of a day and a lunar month, but also the shape of the elliptical cross-section of the cylinders varies significantly. If we define that the width of the outer cylinder as dowsed at ground level is equal to the diameter, **D**, whilst its height equals the radius, **R,** the following elementary logic is assumed.

If $D/R = 2$	the cross section is a circle.
If $D/R > 2$	the cross section is an ellipse with its longest axis horizontal.
If $D/R < 2$	the cross section is an ellipse with the longest axis vertical.

As is apparent from Figure 16, which graphically summarises the analysis, both daily and over a lunar month, that the cross-section of the cylinders is an oscillating oval. There is an upwards trend over the course of the lunar month with a moving average going from a ratio of about 2 at the first new moon to about 2.8 at the second new moon. Further research is therefore required to see if this trend is greater than one lunar month, and is caused by seasonal and/or annual factors. The other observation in Figure 16 suggests that there are possibly five maxima and minima over a lunar month. This may indicate that there is an unexpected perturbation with an approximate 5.6 day cycle. Taking moving averages of the data helps to highlight the latter. The causes of this oscillation are a challenge for further research.

DAILY AND LUNAR EFFECTS ON DOWSABLE FIELDS

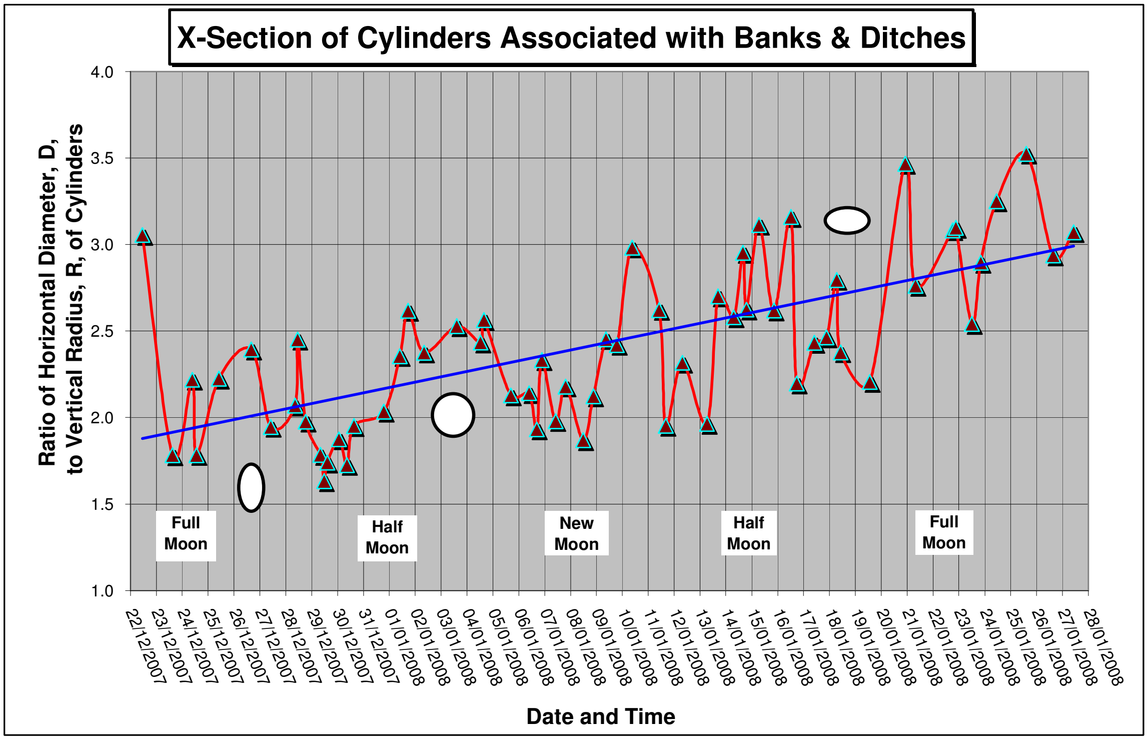


Figure 16

Accuracy of Formulae

In the earlier part of this paper, formulae were found empirically, mainly based on physical banks with substance. It is now appropriate to test if these formulae apply

a) to just 2-lines, (which have no physical variables), and
b) to lunar fluctuations.

As neither of these two factors were previously considered, this would be a decisive test of any good theory.

To recapitulate, *Equation 5* in the section heading “Mathematical Projections and Conclusions” is a general formula for **D**, the diameter of the cylinders, and **s,** the separation distance of the two banks, (which in this experiment have been replaced by the two lines). For convienience, this is reproduced here.

$$\mathbf{D = 9.951\ s^{0.612}} \qquad (\textit{Equation 5})$$

$$R^2 = 0.7726$$

Substituting 20 mm for **s** in *Equation 5* gives a value of **D** of 0.907 metres. This compares favourably with Figure 13, which gives actual values of between 2.5 – 1.0 metres depending on the time of the lunar month.

This correlation is good, bearing in mind the accuracy of this formula is reduced because it relates to averages, and the data points are not the optimised separation distances between the peaks. The formula will therefore give lower results than an optimised actual. The effects of the widths and heights have been ignored, and lunar and daily variations were not considered.

CYLINDER WIDTH FOR ANY SIZED BANKS AND DITCH

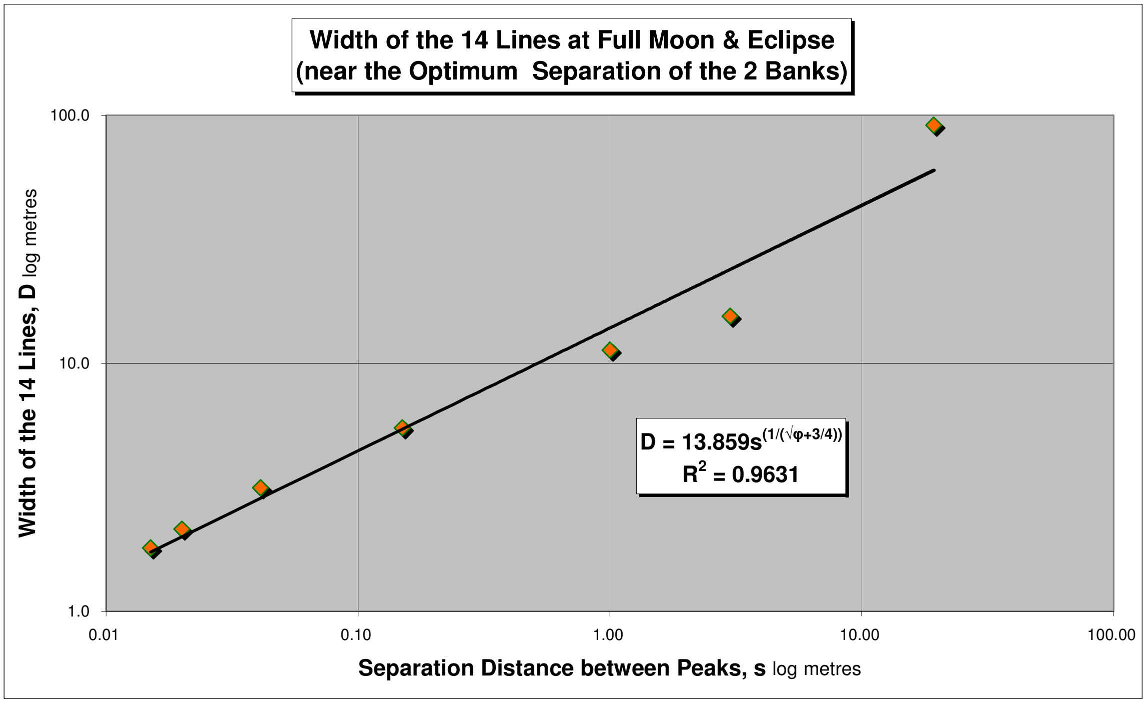


Figure 17

With the benefit of hindsight, the experiments that produced the above formula (*Equation 5)* were reproduced at full moon and not randomly in time. Figure 17 is a graphical depiction of the results, and leads to a more accurate version of *Equation 5*, which is labelled below as *Equation 5a.* The exponent, obtained empirically, equals **0.49**.

$$\mathbf{D = 13.859\ s^{(1/(\sqrt{\varphi}+3/4))}} \qquad (\textit{Equation 5a})$$

$R^2 = 0.9631$

As is apparent, the correlation coefficient is improved significantly from $R^2 = 0.7726$, to $R^2 = 0.9631$. Substituting 20 mm for **s** in *Equation 5a* gives a value of **D** of 2.00 metres. This is a better fit than *Equation 5* and is close to the full moon figure of 2.5 metres in Figure 13.

For any size of banks and ditches, *Equation 7*, in the section heading "Mathematical Projections and Conclusions", is the general formula for **L**, the length of the cylinders from the end of a bank. It is of the form:-

$$\mathbf{L = 15.191\ s^{0.276}} \qquad (\textit{Equation 7})$$

$R^2 = 0.86$

The graph of this equation was depicted in Figure 8.

Substituting 20 mm for **s** in (*Equation 7)* gives a value of **D** of 5.15 metres. This compares favourably with Figure 13, which gives actual values of between 6 metres – 30 mm depending on the time of the lunar month. Again, there is a remarkably high correlation bearing in mind the same qualifications as for *Equation 5* above.

As before, with the benefit of hindsight, the experiments that produced the above formula (*Equation 7)* were reproduced at full moon and not randomly in time. Figure 18 is a graphical depiction of the results, and leads to a more accurate version of *Equation 7*, which is labelled *Equation 7a* below. The exponent in *Equation 7a*, obtained empirically, equals **0.24**, which is twice the value of the exponent in *Equation* 5a, and is another example of a 2:1 ratio within experimental error.

$$\mathbf{L = 14.887\ s^{(0.5/(\sqrt{\varphi}+3/4))}} \qquad \textit{(Equation 7a)}$$
$$R^2 = 0.9273$$

As is apparent, the correlation coefficient is improved significantly from $R^2 = 0.826$, to $R^2 = 0.9273$. Substituting 20 mm for **s** in *Equation 7a* gives a value of **D** of 5.75 metres. This is a better fit than *Equation 7*, and is close to the full moon figure of 5.15 metres in Figure 13.

CYLINDER LENGTH FOR ANY SIZED BANKS AND DITCH

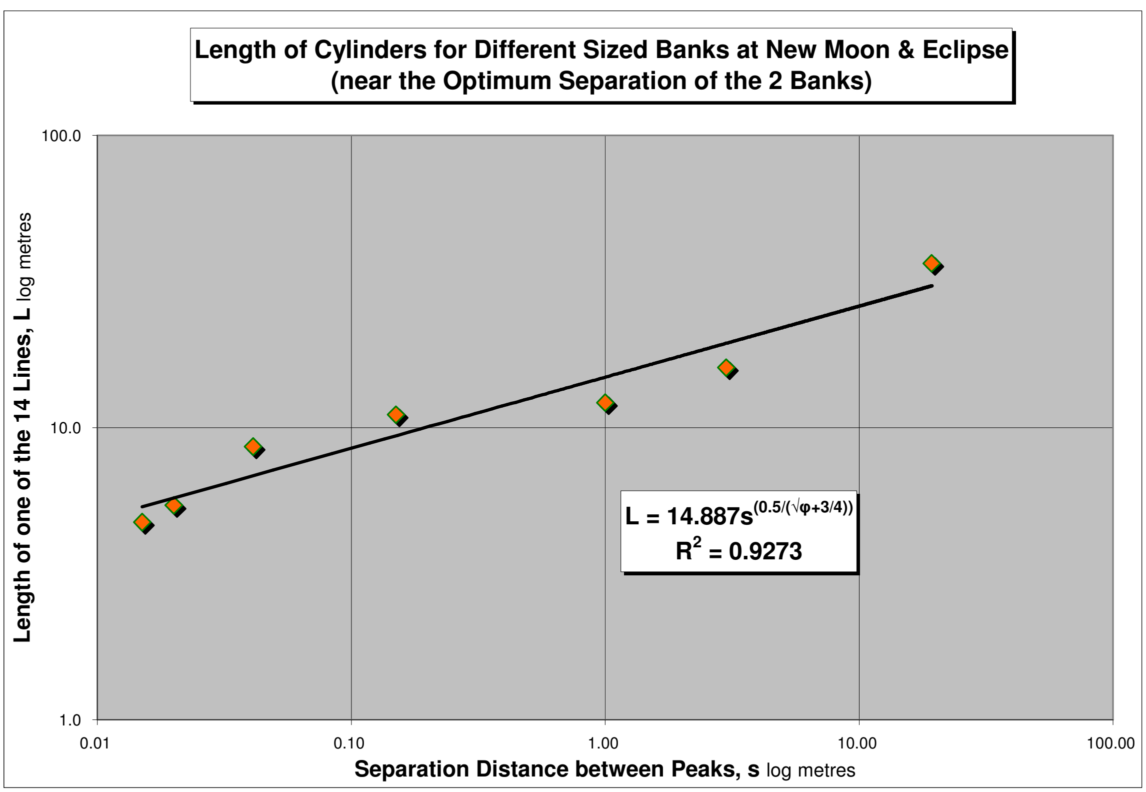


Figure 18

Figures 17 and 18 both suggest that there is a second order sine wave perturbation with the trend line as its axis. At the peaks of this sine wave there appears to be a ±10% variation of the measurements of diameter and length from the trend line. Similarly, this sine wave appears to intercept the trend line at approximately 0.02-0.03 metres, 0.2-0.3 metres, and again at a 9-10 metres separation distance.

Previous conclusions have suggested that **different** mechanisms are responsible for producing the diameter of a dowsable cylinder compared to its length. However, the above paragraph suggests that the **same** mechanism is causing the sine wave perturbation. This obviously requires further research.

Conclusions

These experiments highlight the importance of measurement when dowsing, as they lead to a connection between 1, 2, and 3 dimensional geometry and consciousness. A connection between mind and matter is also demonstrated as the mind focusing just on two parallel lines can produce the identical pattern as say the banks at an ancient site comprising a vast amount of matter. Because very small source objects give, pro-rata, the same patterns as very large source objects with similar geometries, this research also leads to a good demonstration of universal scalar theory. The benefit of using simple 2-dimensional geometry as source objects to produce identical dowsable images as 3-dimensional sources is another important conclusion. This, and other similar examples, suggests that dowsing may be useful in exploring higher dimensions

For example, it is now possible to do sophisticated “laboratory” research that is not limited to travelling on-site, restricted to daylight, and being hampered by the vagaries of weather etc. Another benefit is that the effect of magnetism on banks and ditches, by screening a sheet of paper in a Faraday cage, can now be studied – an impossible line of research on-site. As is apparent, when producing measurements, dowsing geometry is a powerful technique that is sensitive, accurate, innovative, and convenient.

The findings also suggest that when dowsing “earth or subtle energies”, what the dowser observes, and believes he perceives, is not always a physical line on the ground, but is all in the mind. An analogy is to sight being a model in the brain – not just an image on the retina, but a perception in brain cells via the eyes’ retina, rods and cones, stereo vision, colour separation, and information transmissions along the optic nerve. This personal perception may account for some of the variability when measuring the length of a dowsable field at different times, and between different people.

These are significant results not only in investigating how dowsing works, but possibly more importantly, for adopting the use of dowsing in scientific research, and furthering the study of consciousness and the structure of the universe. For example, this line of research has demonstrated that the moon has a strong influence in dowsing and hence on the mind. Using similar techniques it is hoped to determine if known daily variations are due to the tides or hormone levels, or a combination of both. Similarly, current research should determine what cosmic forces cause annual variations in dowsable fields. As all the above astronomical factors influence people's perceptions, further research is justified into whether there are linked health implications as well.

Other research using the techniques described here has demonstrated that some of the lines observed in the banks and ditches pattern are generated by the Earth's magnetic field. Dowsing 2-dimensional geometry has also shown that gravity can not only change dimensions, but can also influence the presence of lines in certain patterns. Again, there may be biological or health implications caused by magnetism and gravity warranting further research.

Another conclusion is that there is a mind and matter implication. The fact that the mind generates exactly the same result from a sheet of paper inscribed with 2-dimensional geometry, as on-site with two banks composed of a massive quantity of matter, cannot be coincidence. Similarly, a non-local mind-matter connection is suggested, as the moon affects the mind's perception of dimensions.

In trying to interpret these complex results and understand dowsing and the Information Field, another line of research is to use an analogy to X-ray crystallography (e.g. determining the 3-dimensional structure of DNA), as this seems to be a promising tool. Answers may result from searching for mathematical transformations between the geometry of 0, 1, and 2 dimensional source objects, and the resulting 3-dimensional dowsable patterns, which, on the surface, seem to bear little resemblance to their source.

This work also leads to suggestions for further experiments by independent parties to confirm that these experiments produce mathematics involving the golden ratio phi (φ), and integer ratios, as well as a connection to gravity. Another connection has been shown between geometry, consciousness, mind and matter, as well as good demonstrations of universal scalar theory.

Future Work

This concluding section sets out some suggested topics for further research, starting with the obvious need for more measurements, by independent observers of the heights, depths, and widths of dowsable fields created by banks and ditches. In particular, more measurements on asymmetrical banks with different heights are required, to see if the vertical separation relationships are identical to the horizontal ones discussed here.

More research is required on dowsing two lines and the reasons for their optimum separation, as well as the daily and lunar-monthly fluctuations, and if these extend seasonally or annually.

Theoretical research would benefit from determining the reason for the number 7, why dowsable fields cut-off suddenly, and the origin and geometries of the plethora of Type 1, 2, 3, 4 lines and vortices. This should lead to a theory explaining the mathematical formulae that were found empirically.

There may be some benefit in assuming that banks and ditches are a 360° sine wave. If so, it may be possible to explore Fourier Analysis and the associated holograms of banks and ditches. Additionally, holograms of banks and ditches can be produced optically. Apart from researching the theory of the holographic universe, the intention is to discover if dowsers can detect and interpret a hologram, and whether the results bear any relation to the findings in this paper, which apply to dowsing banks and ditches physically on-site.

In trying to interpret these complex results and understand dowsing and the Information Field, another line of research is to use an analogy to diffraction gratings or X-ray crystallography, as these seems to be a promising tool. Specific diffraction patterns perceived at the macro level are produced by waveforms probing regular geometry at the micro level, and the interference fringes produced can be measured. A good example of this was determining the 3-dimensional structure of DNA. In our case, the dowser is probing the Information Field (which as discussed above, may be a structured hologram or geometrical stored information) with "consciousness" rather than electromagnetic radiation. Preliminary work encourages this approach as examples of strong resonances and interference have been demonstrated.

One possible way of doing this could be by dowsing simple geometric shapes such as dots, lines, circles, squares, triangles etc. and comparing the dowsable fields. Answers may result from searching for mathematical transformations between the geometry of 0, 1, and 2 dimensional source objects, and the resulting 3-dimensional dowsable patterns, which, on the surface, seem to bear little resemblance to their source.

This approach could also have the benefit of adding support, or otherwise, to the theory of the Information Field, and if so, lead to an understanding of how macro geometry is mirrored in the Information Field. All the above suggestions may also further our understanding of consciousness.

Bibliography

1 Bekenstein, Jacob : *Information in the Holographic Universe,* Scientific American, 2003
2 Bohm, David : *The Undivided Universe,* Routledge, 2005, 041512185X
3 Bohm, David : *Wholeness and the Implicate Order,* Routledge,1980
4 Bird, Christopher : *The Divining Hand,* Shiffer Publishing, 1993
5 Curran, Jude : *The Wave,* O-Books; 2005, 1-905047-33-9
6 Dyer, Dr Wayne : *The Power of Intention,* Hay House 2004
7 Edwards, Lawrence : *The Vortex of Life,* Floris, 1993, 0-86315-148-5
8 Greene, Brian : *The Fabric of the Cosmos,* Allen Lane, 2004
9 Hansard, Christopher : *The Tibetan Art of Positive Thinking,* Hodder, 2003
10 Hawking, Stephen : *The Universe in a Nutshell,* Bantam Press, 2001
11 Keen, Jeffrey : *Consciousness, Intent, and the Structure of the Universe*, Trafford, 2005, 1-4120-4512-6, http://www.trafford.com/robots/04-2320.html
12 Laszlo, Ervin : *The Connectivity Hypothesis*, SUNY Press, 2003
13 Laszlo, Ervin : *Science and the Akashic Field*, Inner Traditions; 2004;

1-59477-042-5
14 Lyons, James : *Quantifying Effects In Consciousness*, University of Hull 1998
15 McTaggart, Lynne : *The Field,* Harper Collins, 2001
16 Mitchell, Edgar : *Nature's Mind: the Quantum Hologram*, http:www.edmitchellapollo14.com
17 Penrose, Roger : *Shadows of the Mind*, Oxford University Press, 1994
18 Penrose, Roger : *The Emperor's New Mind*, Oxford University Press, 1999
19 Pribram, Karl : *Consciousness Reassessed,* Mind and Matter, 2004
20 Radin, Dean : *Conscious Universe,* Harper, 1997, 0062515025
21 Radin, Dean : *Entangled Minds*, Paraview, 2006, 1-4165-1677-8
22 Rosenblum, Bruce & Kuttner, Fred : Quantum Enigma, OUP/Duckworth, 2007, 978 07156 36541
23 Sheldrake, Rupert : *Morphic Resonances*, Inner Traditions, 2000
24 Sheldrake, Rupert : *The Sense of being Stared At*, Arrow, 2004
25 Smolin, Lee : The Trouble with Physics, Allen Lane, 2006, 978-0-713-99799-6
26 Talbot, Michael : The Holographic Universe, Harper, 1996, 0586091718
27 Tiller, William : *Conscious Acts of Creation*, Pavoir, 2001, 01929331053
28 Tiller, William : *Subtle Energies, Intentionality and Consciousness*, Pavior 1997, 0964263742
29 Various authors : *The Dowsing Research Group; The First 10 Years*, Magdalena, 2003, 0952369516
30 The British Society of Dowsers, Earth Energies Group : *An Encyclopaedia of Terms*
31 Various authors : *The Journal of the British Society of Dowsers*, Volume 39 No. 273, September 2001