

The Building Site in the Museum

Cosmos

Those who have good reason to fear Philosophy often accuse her devotees of asking silly questions that cannot be answered, such as, “How many angels can dance on the head of a pin?” This is not a silly question and I know the answer: it is six. (The answer is actually implied in the question since a pin or nail is the root meaning of *Vav*, the sixth letter of the Hebrew alphabet, but this is not the place to go into the mysteries of Kabbalistic numerology).

The question one naturally asks oneself is what sort of dance are the angels doing? A clue is given by the fact that angels are often portrayed as playing musical instruments. This is quite fitting since rational men who have heard the music of the Heavenly Spheres assure us that music has its basis in mathematical ratio. As I shall show, it also explains why six angels dance on the head of a pin, since music is the traditional province of the Triple Muse. Thus inspired poets see the cosmos as a musical composition and philosophers liken the Creator’s work to the construction of a musical scale.

Lest the exasperated reader convert the Sacred Museum into a collection of mere historical curiosities I will point out that underlying all this fanciful analogy is the principle of relationship. The Human Mind perceives the world as a cosmos that is, an ordered system in which each part is lawfully related to the next by interlocking processes to form an organic whole.

Let us consider the simplest conceivable system – a differentiation within an initial Unity resulting in two elements. The maintenance of Integrity requires a third principle to mediate between them. This Supreme Triad has been described in numerous ways according to poetic inspiration, religious disposition and philosophical inclination. Suffice to say that the arising of the Trinity and its relationship to Unity and the Initial Creative Will is a mystery that has never been satisfactorily described in words and is perhaps best approached through mystical contemplation. However, in order to show how the principle of the Octave arises as a logical necessity from the Triad I am forced to label its parts. I shall refer to them as the Affirming Force (A), the Denying Force (D) and the Unifying Force (U).

Change

In order to see how an observable Universe can be derived from this timeless Trinity we must consider the natural history of the ancient dragon and its twin manifestations of permanence and change- To derive a system from the Three we must see them as acting sequentially. There are six possible combinations of the Three Forces which we can use to construct a cosmos. To make them less abstract we can name these Constructors as the processes of Creation, Expansion, Repetition, Contraction, Reception and Transformation.

The relationship between the six Constructors is shown pictorially in Figure 1. Here the Constructors are seen to arise as circular swirling movements generated by the interactions of the Three Forces. The outward arrows represent the resultant force of each Constructor. Creation and Transformation for example are adjacent since they both end in the Affirming Force.

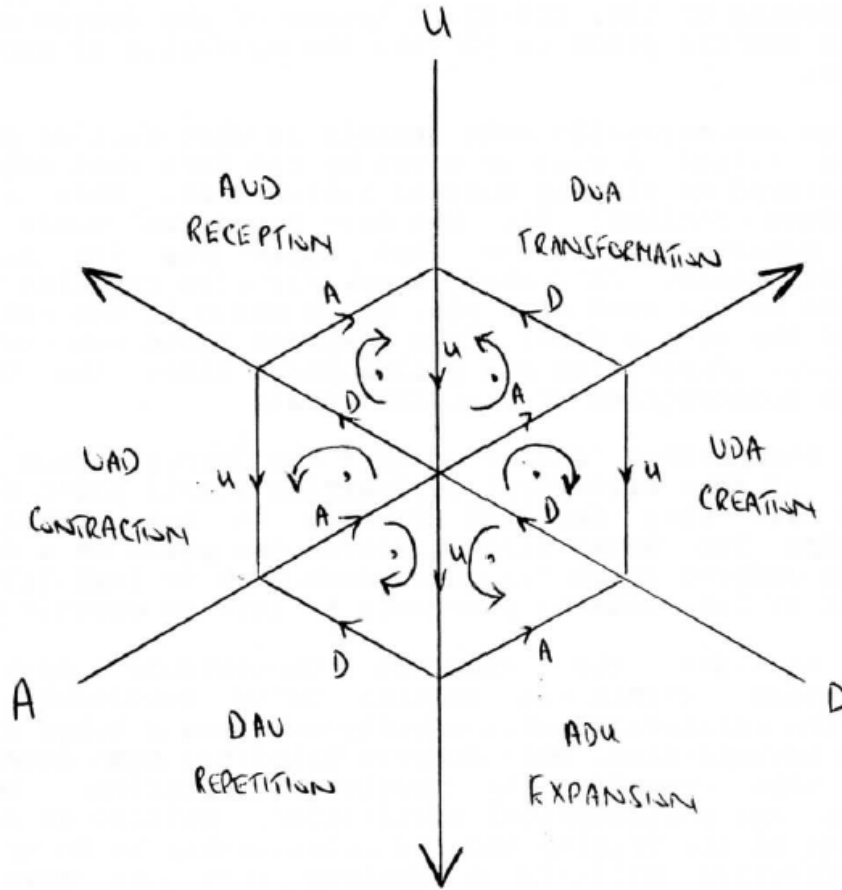


Figure 1: The Temple of the Constructors

Causality

In a complete set containing all six Constructors there will be a total of eighteen forces (3 x 6). However, the world we perceive is not just a random combination of forces. Each stage in a complete process can be seen as both the cause of the following stage and the result of the preceding stage. This can be represented by linking the Six Constructors so that the last force of each Constructor is the first force of the next. Thus any complete process can be viewed as a pattern of twelve forces an example of which is given in figure 2.

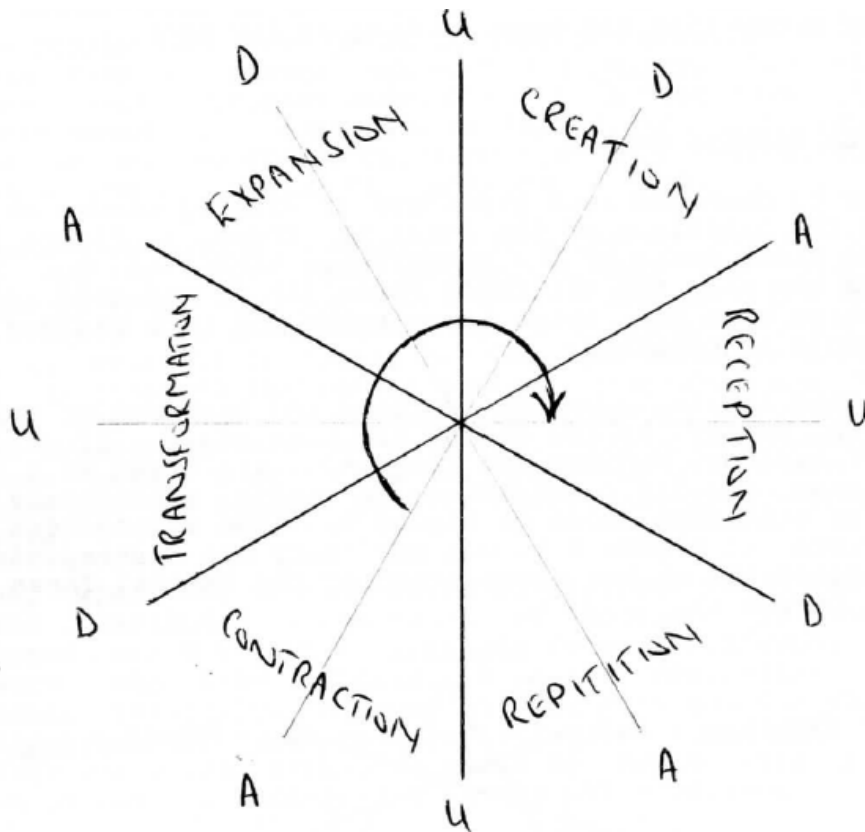


Figure 2: The Tail Eating Serpent

A familiar example of such a twelve-fold cycle is the twelve months of the year.

Constant Change

It will be seen in the example given that the Unifying Force (U) is repeated after every third step dividing the overall process into four equal stages. In our example of the twelve months of the year this might correspond to the sequence of spring equinox, summer solstice, autumn equinox and winter solstice. Thus we have a process of constant change in which each stage proceeds like the others. This is a useful way of dividing up time but most processes we experience within time do not unfold in such a straightforward manner. When going for a walk, for example, one may start off briskly, then amble slowly as one admires the view, then hurry along as one remembers one has an appointment to keep. In a car journey one experiences numerous accelerations and decelerations. Human metabolic processes do not run at a constant rate. A process of growth may speed up or slow down. In the course of a day time may seem to drag or fly past.

Constantly Varying Change

In order to describe such processes of varying change we need to consider the behaviour of the other two forces in figure 2. If we take the first force of the constructor EXPAND as our starting point we see that the Affirming Force (A) is repeated after four steps, three then two, three again returning to a maximum of four as the cycle is repeated.

This process is simply one of increase and decrease or transition from high energy to low energy and back again. If the three phases of Maximum, Minimum and Transition are drawn as a triangle then adding the Six Constructors in their appropriate places gives the enneagram shown in figure 3. (The arrangement of the Constructors in figure 3 is not arbitrary but corresponds to the pattern generated by the interaction of the initial Three Forces shown in figure 1).

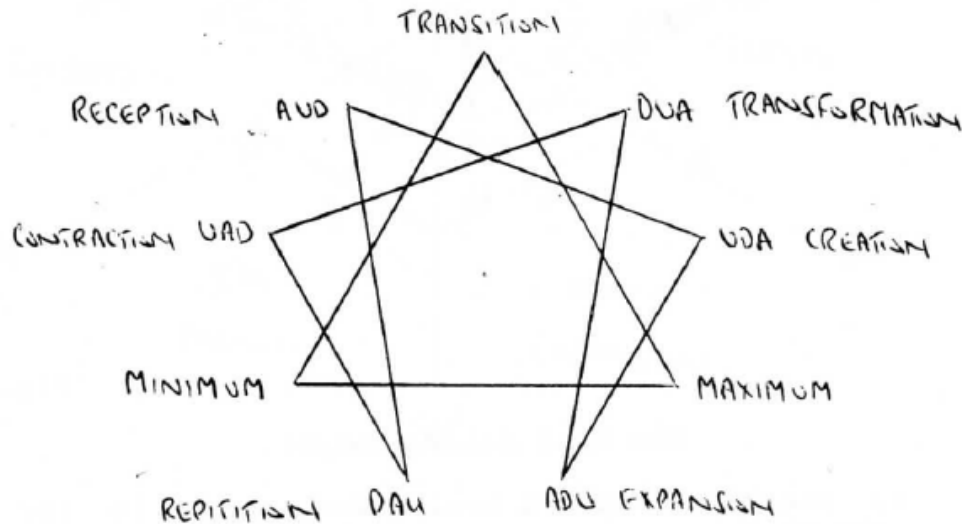


Figure 3: The Dance of the Nine Muses

The rhythmically varying change represented by the spacing of the Affirming Force describes a general principle. During the course of a complete process the initial impetus decreases to a low point, then builds up again as the process completes. When going for a walk for example one starts briskly, tires then has a second wind as one's destination is in sight. In performing any task one may start with enthusiasm, then inevitably the initial impetus wanes till a final effort is made to complete the job. A pendulum gathers speed as it falls, then slows down as it approaches the end of its swing, speeds up as it falls back the other way, then slows down again as it returns to the starting point. In the cycle of the breath the volume of the lungs increases to a maximum, decreases to a minimum, then increases again. Some cosmologists have suggested that the entire Universe may undergo such a cycle.

In the yearly cycle the hours of daylight experienced every day decrease from a summer maximum to a minimum at the winter solstice, then increase once more. Folk festivals all over the world are based on an awareness of this cycle which underlies the mythologies of numerous cultures. A personification of the process undergoes a drama of death and rebirth.

Of course the hours of darkness experienced during successive nights follow the same pattern except that the maximum corresponds to the minimum hours of daylight and vice versa. This is precisely the relationship of the Denying Force (D) to the Affirming Force (A) in figure 2. The Jews actually have two new years, one close to the spring equinox, the other near the autumn equinox. The poet and scholar Robert Graves postulates that a similar arrangement was common to many ancient cultures, the two processes being personified as the eternally warring twins competing for the favours of the Triple Goddess who presides over the cycle.

However, when the maximum hours of daylight are experienced in northern latitudes inhabitants of southern latitudes will experience minimum daylight, which is very confusing for those emigrants who have exported seasonal festivals, such as Christmas. Similarly, mid-day will be midnight for those at the opposite longitude. As we went for our walk in the earlier example two such reciprocal processes could be seen at work in the legs, one set of muscles contracting as the other relaxed.

Thus we have a model in which each complete process consists of two complementary processes (represented in figure 2 by the behaviour of the Affirming and Denying Forces). Each of these varying processes can be measured against a common standard by a third process (represented in figure 2 by the evenly spaced Unifying Forces). The comparison of some variable against a standard is the basis of much scientific observation. The results are often presented in the form of a graph. It is conventional to use the horizontal axis to represent the standard and the vertical axis of the graph to measure the variable. In our example of the yearly cycle we can take time (which is here assumed to flow at a constant rate) as our horizontal axis and hours of daylight/darkness experienced each day is the vertical. The result is shown in figure 4.

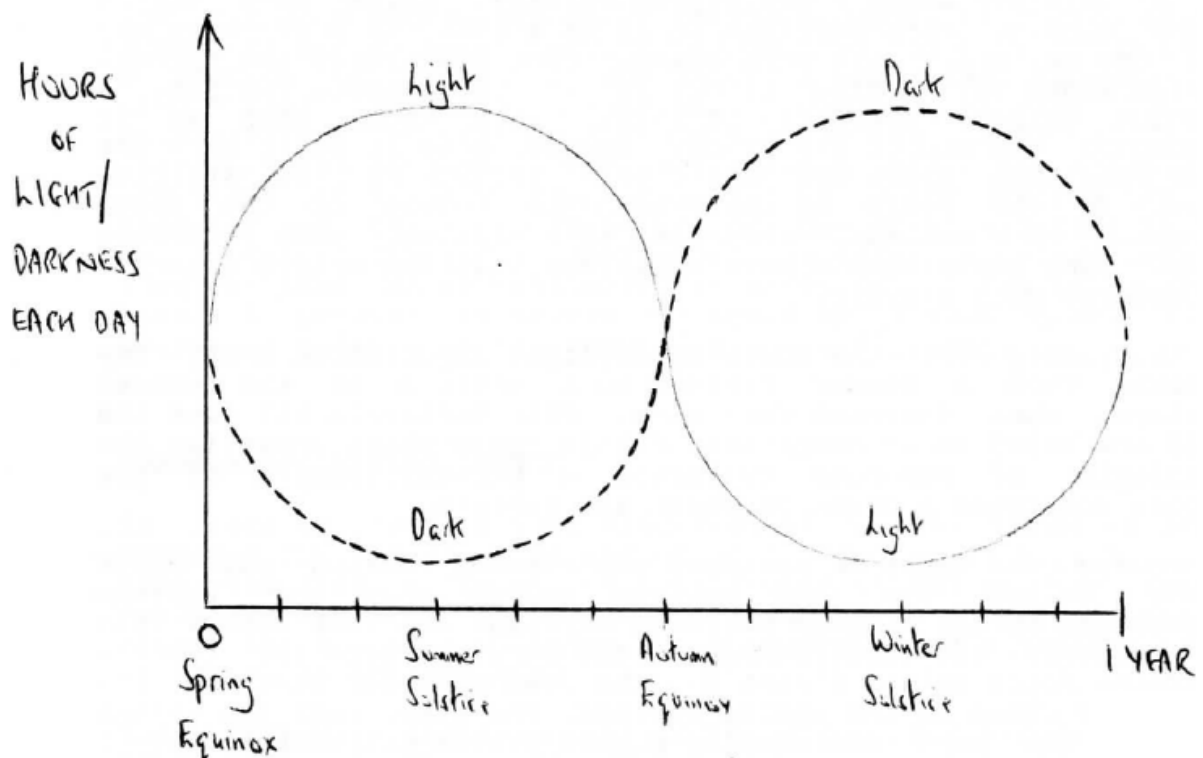


Figure 4: The Twins

This model is adequate to describe a process of continuously varying change. However, many changes we experience do not occur in such a smooth and regular manner. On a car journey, for example, periods of travelling at constant speed may be interspersed with rapid acceleration or deceleration. In cookery a sauce being stirred for a long time will suddenly thicken. When water is heated the rise in temperature will stop when the point is reached when the energy input is used in a phase transition to steam rather than for random heat motion of water molecules. In intellectual creativity ideas gestated for a long time may

suddenly bear fruit. Organic growth is often subject to periods of relative dormancy and sudden spurts. For want of a better word I will describe these as processes of discontinuously varying change.

Discontinuously Varying Change

Figure 5 shows the result of combining a variable process (represented by the Affirming Forces in this example) and a constant process (represented by the Unifying Forces in this example) into a single process.

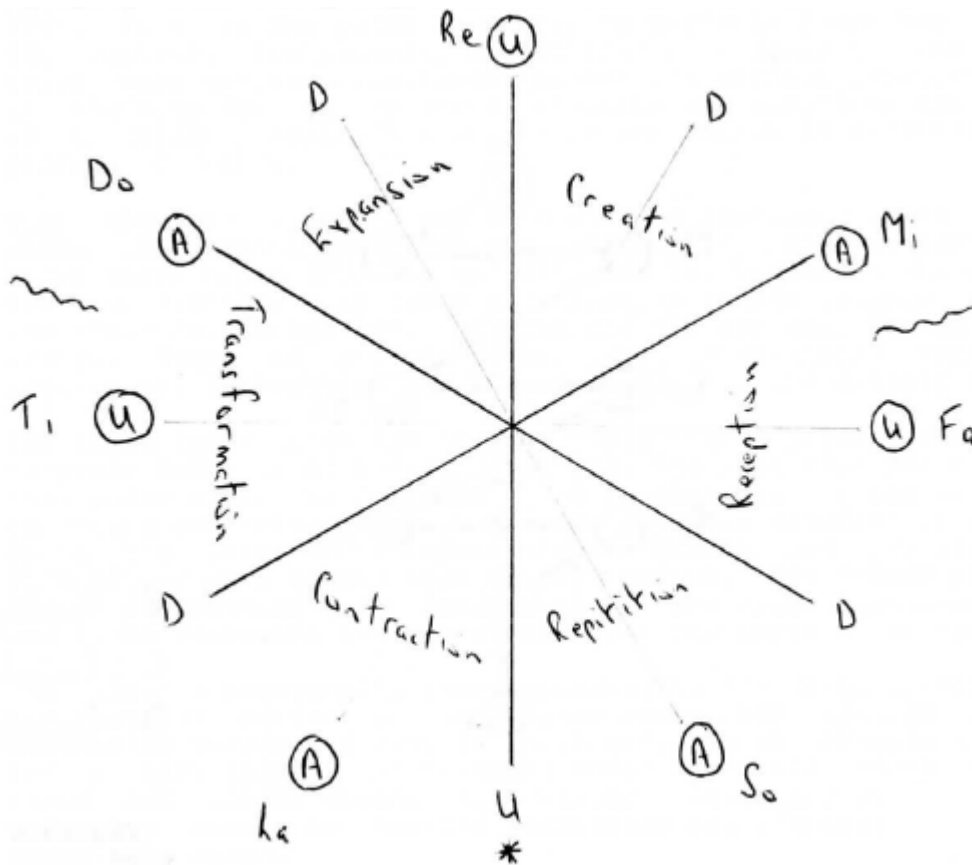


Figure 5

This pattern is analogous to that of the musical octave, the Affirming and Unifying Forces forming seven notes separated by seven intervals. Five of these intervals consist of an initiating force and a resultant force, mediated by a third force. These mediating forces between the notes are the four Denying Forces and the unused Unifying Force. Their positioning is analogous to that of the sets of five black keys which are inserted between the white keys on a piano keyboard.

There are two intervals where there is no third force present, corresponding to the Mi-Fa and Ti-Do intervals of the musical scale. Since the Trinity is the basic law from which the Octave has been derived it is to be expected that points where one of the Three Forces is apparently absent represent discontinuities in the smooth unfoldment of a natural process or a stage

where difficulties might arise in any endeavour. A number of examples of such discontinuities have already been given.

The two discontinuities Mi-Fa and Ti-Do occur in intervals where a third force is apparently absent. One of the Three Forces is also absent at the So-La point. Although the interval is filled by the Unifying Force there is no third force since So and La are both represented by the Affirming Force. The significance of this third discontinuity will become apparent later.

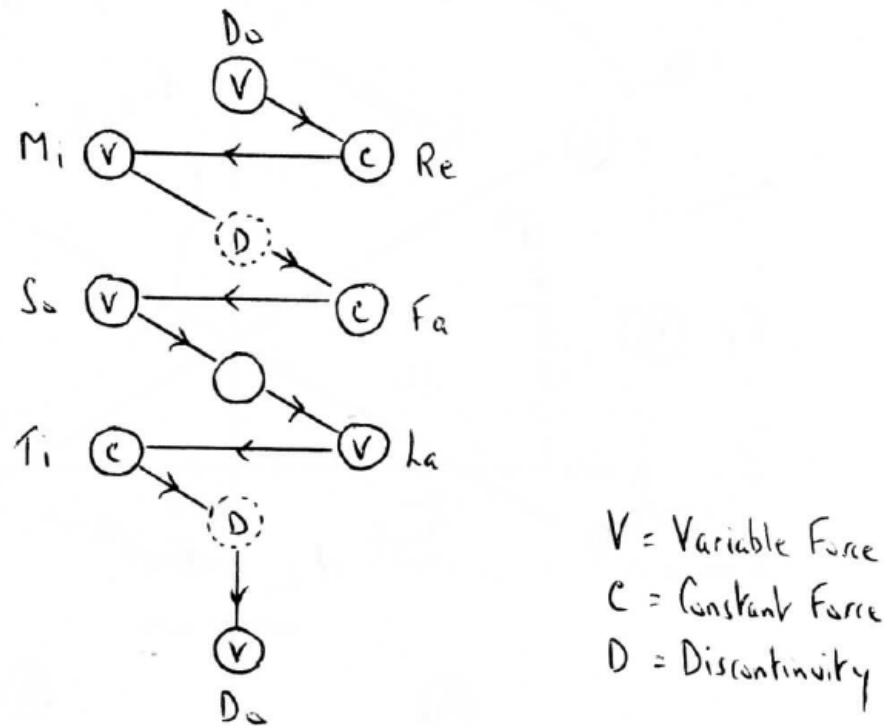


Figure 6

Thus the Octave represents a process of discontinuous change. Its seven notes have been derived by pairing a variable force whose spacing shows a process of waxing and waning (the Affirming Force in the example given) with a constant force with a regular spacing (the Unifying Force in the example given). The basic pattern is that of three triads shown in figure 6.

The first triad consists of a constant force (marking the note Re) followed by a variable force (the note Mi) then a discontinuity. This arrangement is repeated in the next triad. Again a constant force (Fa) is followed by a variable force (So) and a discontinuity. In the third triad there is a switch in polarity with the variable force (La) leading the constant force (Ti). This is the point at which the variable force has passed its weakest. The polarity is switched back again in the first triad when the variable force reaches its maximum strength again at the note Re. The Do which initiates and completes the Octave is of course a variable force since the Octave is essentially a process of change.

Thus the entire Octave has been derived from just three forces whose interaction generates six interlocking constructors. The first three notes (Do, Re and Mi) mark the beginning and end of the constructors (Expansion and Creation in the example given). The last four notes

(Fa, So, La and Ti) are each formed by the central force of a constructor (the constructors Reception, Repetition, Contraction and Transformation in the example given).

The first three notes lie in that phase of the process where the variable force is at maximum strength. The last four notes lie in that phase where the variable force is weakest. If one wishes to construct something, be it a theory, physical artefact or a human being the first phase represents the growth and proliferation that arises as a consequence of any impetus. The second phase is one of consolidation and organisation. The discontinuities Mi-Fa and Ti-Do represent the transition from one phase to another.

The first discontinuity (corresponding to the Mi-Fa interval of the Octave) arises in the region where the spacing between successive variable forces is shortened- In the example of going for a walk this is the point at which one would start to get tired and wonder whether to continue. It is the point in any endeavour when the initial enthusiasm has evaporated and the going gets tough. The second discontinuity (corresponding to the Ti-Do interval in the Octave) arises at the end of the cycle when the spacing between successive variable forces is lengthened once more. In our walk it is the point where we speed up because the destination is in sight. It is the point at the end of an endeavour when things suddenly begin to fall rapidly into place.

Discontinuities arise due to the absence of a third force in an interval. Therefore for such a process to continue an external influence must act as a third force by giving a shock to the system. A pendulum can be set swinging by an external shock displacing it from its equilibrium in the Ti-Do interval. If sufficient momentum has been imparted to the pendulum it will swing back down through the initial point of equilibrium (which is now the Mi-Fa interval) and out again against the force of gravity.

In a two stroke interval combustion engine the power stroke is initiated by a spark at the Ti-Do interval. This external shock causes the compressed petrol mixture in the cylinder to explode and the expanding gas forces the piston down the cylinder and turns the crankshaft. As the piston passes an outlet exhaust gas escapes and fresh petrol enters through an inlet. Then in the Mi-Fa interval the momentum imparted to the crankshaft initiates the return of the piston up the cylinder, compressing the petrol ready for ignition.

It will be seen that the Ti-Do interval is bridged by an external shock which completes one octave and initiates another. The Mi-Fa interval becomes a discontinuity if there is insufficient impetus within the system itself. For example, the agricultural octave is completed and initiated by the external intervention of the farmer who reaps and sows. The Mi-Fa interval is an 'internal' shock since the germination of the seeds in spring depends on a process within the natural cycle independent of the farmer's activity. In our walking example the Mi-Fa discontinuity has to be bridged by the inner resolve of the walker. An external destination provides the shock to bridge the Ti-Do interval. The Mi-Fa interval is bridged by the tenacity of the artist, author or inventor struggling to make their inspiration a reality. But this will never be fully realised unless the external world is receptive and allows the final discontinuity to be crossed. Here it is not a question of will power but of doing the right thing at the right time when a profitable result can be obtained without wasted effort.

What if the interval is not crossed? To answer that we must look at our model in a bit more detail. So far we have derived an octave by combining one type of variable force with a constant force. However, any interlocking set of the Six Constructors contains two types of

variable force. In the example used so far we derived an octave by combining the affirming forces and the unifying forces in a single process. A second octave is derived by combining the unifying forces with the denying forces

If we look at figure 7 we see that the Do of the second octave is adjacent to the Mi-Fa interval of our first octave. Therefore, if the first octave is blocked at the Mi-Fa interval then the unused impetus of the process can be used to initiate a new octave. This is what commonly happens in everyday life. When a job gets difficult we tend to give it up and start something else. Thus many tasks remain uncompleted because there is insufficient commitment to carry them through. We take the line of least resistance and never really achieve anything. The practical application of this is that if this interval is recognised self discipline can be applied and the energy not wasted on unnecessary activity.

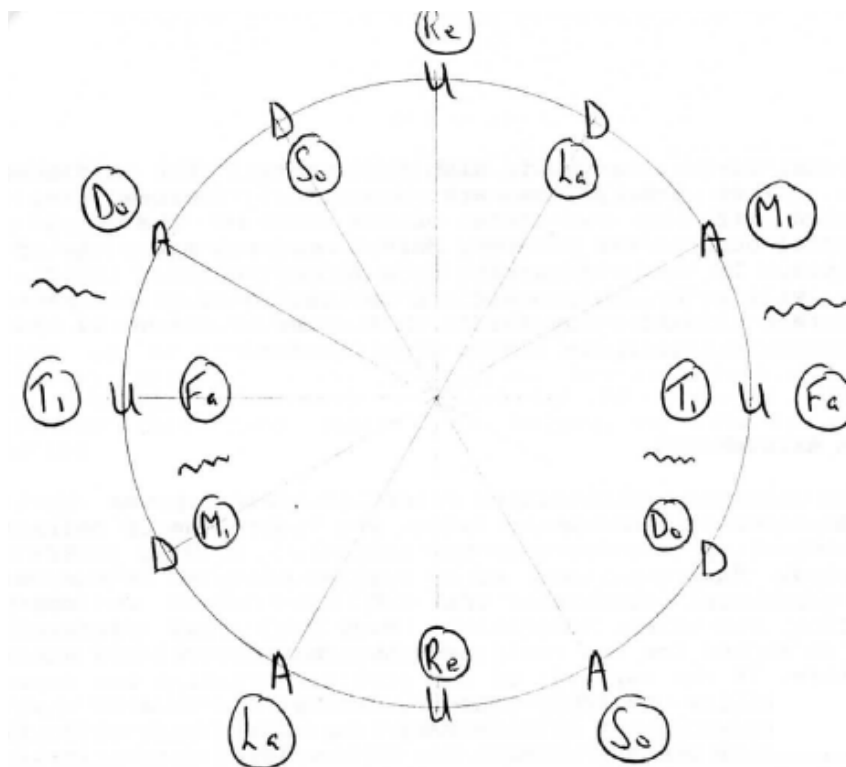


Figure 7

Of course, there may be times when it is realised that the consequences of an octave are undesirable so it is appropriate to switch to some other course of action. A psychological example of this is displacement activity. This occurs when a person cannot, dare not or feels it is wrong to externalise an impulse so the impulse is redirected. This may take the form of venting one's anger at somebody on an innocent third party. However, often the impulse is channelled into some other activity. This is a useful mechanism in that it prevents the gross manifestation of antisocial acts, but the substituted octave is often a process of useless activity whose only function is to use up the energy generated. Once a flow of energy is initiated it cannot be stopped. 'Bottling it up' within will only result in it being used to initiate a self-destructive process perhaps resulting in illness.

The opportunity can be taken to do something useful. I found the resources to type a large section of this essay after realising that kicking chairs because I was angry was a waste of

energy. However, one must be careful of using a switch in octaves as an excuse not to continue a useful process where perseverance would be more appropriate. Each octave must be judged on its merits.

At the Ti-Do interval it may be found that external conditions are not right for the process to be completed. There is no audience to appreciate one's play, no market for one's product. It may be best at this point to face the inevitable and do something else instead, to switch to another octave. However, this final Ti-Do interval is also the interval that initiates the octave. Many enterprises are successful because they are initiated with an awareness of the needs of the time so a successful outcome was assured. Market research makes use of this principle. If one is working on a larger scale, though, the octave will be a long process and initiating it on the basis of the current situation may result in failure if the world changes. Here one must anticipate future requirements.

Mutual Maintenance

In the absence of conscious effort it would appear that the natural tendency would be to follow the least line of resistance, switching from one octave to another, nothing ever being completed. However, some of my earlier examples of the octave were mechanical processes that did not depend on conscious intention for their completion. Many biological processes on which we depend for our continued physical survival are automatic in nature. If the survival of our physical organism was dependent on our ability to apply conscious effort and to see what was necessary we would not survive very long. There must obviously be some mechanism whereby octaves can be completed automatically.

If we refer back to figure 7 we see that two octaves can be paired so that the Mi-Fa interval of one octave is adjacent to the Ti-Do interval of the other and vice versa. These can be seen as points where one process affects another. The by-products at the Mi-Fa interval of one octave may provide the external shock to complete another octave. A simple example is two people on a see-saw. One person's weight is used to raise the other. One person kicking against the ground causes the other to drop. A similar principle operates between two pedals of a bicycle. The application of this principle underlies the skilful use of a hammer, when a rhythm is established whereby the external shock of the hammer hitting an object is used to power another blow. Both animated conversations and futile arguments may be sustained in the same manner.

Such reciprocal maintenance is the basis of ecological balance. For example, plants assimilate the carbon from carbon dioxide in the air during the process of photosynthesis in green leaves and give out oxygen as a by-product. Animals take in oxygen during respiration, giving out carbon dioxide as a by-product. In the human life cycle maturity of the sexual organs at our Mi-Fa interval enables us to provide the external shock to initiate a new physical octave - a child.

There is, however, a more subtle pair of mutually-maintaining octaves involved in the process. It may surprise you to learn that many species consist not of a single type of organism but two. The brown spores produced on the underside of fern fronds do not germinate to give what most people would recognise as a fern. Instead they grow into a totally different organism called a prothallus. This is a small, flat, heart-shaped structure. It is called the haploid generation because it has half the number of chromosomes of the fern

frond. It is also called the gametophyte because it forms male and female gametes at the Mi-Fa interval of its life cycle. Their fusion is the external shock that initiates the diploid generation with the double complement of chromosomes. This is the familiar fern frond which is called the sporophyte since in its Mi-Fa interval it produces the haploid spores which initiate the Do of a new prothallus. Before scientists realised the mutually-maintaining relationship of the two types of organism they were assumed to belong to totally different species.

In the mosses the sporophyte is represented by the small stalked capsules growing out of the green cushion of the gametophyte. In flowering plants it is the sporophyte which is dominant, the gametophyte being reduced to the processes occurring in the production of gametes within the sex organs. I will leave it to the reader to work out where the mutually-maintaining octave of their hidden other self resides.

Such mutually-dependent processes are the basis of our existence and if our awareness is confined to only one process then our actions will have unforeseen consequences. The notes of a single octave are formed from just two of the three types of force. To see reciprocal maintenance in action we must go beyond our habitual dualistic thinking and see the hidden third force in each situation.

A practical application of this reciprocal maintenance is found in commerce. One might expect that the most efficient way of doing things would be to see a single octave through to completion before starting a new one. This is not always the case. A business run on this basis would soon go bankrupt. Octaves start a lot earlier than we think. What we often take to be the beginning of a process is actually the passing of the Mi- Fa interval.

This is easiest to see in a job which involves observable physical activity. Building a house, mowing a lawn, serving a meal or whatever is not the start of the commercial octave. The actual setting up of the job, the process of arranging a contract, agreeing a price, finding a customer, must come first. Thus if you start thinking about a job only once the previous job as been completed your workmen will stand idle while you go and find them something new to do. As soon as the workmen set to at the Mi-Fa interval you must take this as an external shock to initiate the Do of a new octave and begin arranging the next job. The resolve to get on with this next job at the Mi-Fa interval provides the external shock to complete the previous job. Without this pressure the work will drag on with no incentive to make the effort to finish it off. "Pull your fingers out: we've got another job to get on with tomorrow."

In a small business the same people must operate both mutually sustaining octaves. This is why when you hire somebody to work on your house they do a lot of work then suddenly disappear somewhere else, then just as suddenly appear again just when you were thinking of hiring somebody else. As a householder you naturally expect them to concentrate exclusively on your octave, the maintenance of their livelihood being no concern of yours. The system breaks down if the businessman concentrates too much on one octave to the exclusion of another or switches to another octave as an excuse to avoid facing difficulties. Either way the octaves cease to overlap in a mutually sustaining manner.

Conscious Work

Running a business is an example of octaves which need to be overseen to preserve reciprocal maintenance. However, many mutually maintaining octaves once set up rapidly become automatic, self sustaining processes. Automation takes place in the psychological realm as well as in factories. We are born with many such mutually maintaining processes already in place. To be more than a mechanism conscious evolution is necessary. This involves octaves that are not completed automatically for us by Nature.

I barely had enough will to complete this essay, even then it may never benefit anybody because I lacked the understanding or foresight to see what was necessary. How is anything of real value to be achieved?

Some people are initiators. They are good at starting new things, but lose interest at the Mi-Fa interval when the novelty wears off and the details have to be worked out. They often think they have completed an octave when the real work has hardly begun. Others enjoy a challenge and will pick up processes at the Mi-Fa interval. In any successful organisation there are the hard workers, those with staying power who struggle on doggedly when the enthusiasts have moved to fresh pastures. They often think they are responsible for the whole process when they are merely working out the consequences of an existing impulse. They will lose interest when a solution is in sight and look for a fresh challenge thinking the process is as good as finished.

Yet others are ‘midwives’. They specialise in bringing things into the world, in completing octaves, yet can neither initiate or formulate anything. However, since the final Ti-Do interval also initiates a new octave they may advise others of what is required or is worth persisting with. I cannot resist dropping the hint that publishers and editors may fall into this category.

In the Platonic dialogue *Theaetetus*, the philosopher Socrates pointed out that a good midwife not only assisted at birth, but was skilled at recognising pregnancy and knew about pairing types to produce the best children, just as matching a shoot and seeds to soils is the same skill as the cultivation and harvesting of crops. Similarly assisting a person’s inner potential to come to fruition is linked to a knowledge of what conditions are conducive to the arising of that potential.

If the different skills described can be brought together to work harmoniously, without interfering with each other, then perhaps the miraculous can be achieved.

Steve Lee

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