Designing Cultural Rosaries and Meaning Malas to Sustain Associations within the Pattern that Connects

Introduction
There are any number of insightful documents on what ought to be done at every level of society. These tend to be lengthy and thus heighten the challenge of memorability -- length is ultimately counter-productive. It is difficult to comprehend and retain an integrative pattern of insights -- whatever the degree of support offered by computer technology. In addition whatever is offered tends to be as much an instrument of conceptual exhaustion -- rather than offering the possibility of recreation and empowerment of the individual, hopefully to be entrained by any new thinking.

This note explores the possibility of designing 'cultural rosaries' (or 'meaning malas') to hold associations forming patterns of supportive insight. As simple physical devices, they can be used as mnemonic instruments to reinforce insights that allow the individual (or group) to reframe comprehension of any context. They offer a constant reminder of other ways of thinking -- and alternative opportunities for acting.

Part of the title derives from Gregory Bateson's insight: "The pattern which connects is a meta-pattern. It is a pattern of patterns. It is that meta-pattern which defines the vast generalization that, indeed, it is patterns which connect.". And it is in this from this perspective that he warns: "Break the pattern which connects the items of learning and you necessarily destroy all quality." (1979, pp. 8-11).

In many ways this note is an encouragement to a do-it-yourself approach to the design of such rosaries or malas. It offers pointers to historical parallels, as well as evoking possibilities to be explored.

Challenges
In a society characterized by information overload, and in which many creative people have new insights to offer, how are such insights to be integrated by the individual hoping to benefit from them?

One challenge is how to 'pack' insights into a form that can be freely explored, rather than having to be learnt as a task or an obligation. Because part of the difficulty is that many of the insights on offer are proposed as preferable to other insights that are thereby implicitly denigrated, a way needs to be found to enable recipients of such insights to navigate between them -- without being trapped inadvertently by any of them.

Another challenge is how to avoid clustering insights into a system of classification that is itself perceived as an alienating imposition.

A further challenge is how to enhance the 'deliverability' of any such device, especially to those who may have limited resources. In this sense a device that can be made with the simplest materials has much to recommend it -- especially if the process allows for a high degree of craftsmanship, for those who appreciate this.
Proposed 'cultural rosary' or 'meaning mala'

A circle of beads, forming a necklace or rosary (mala), is a common artefact in many cultures. It is used for decorative purpose as well as being used by religious groups, notably as prayer counters -- possibly following a rhythm. But it is also used in the form of 'worry beads' in some cultures. The religious form, common in both East and West, is used as a mnemonic device to order a series of prayers or meditational mantras (http://www.fonsvitae.com/beads.html). In Buddhism the beads represent the number of mental conditions or sinful desires that one must overcome to reach enlightenment or nirvana. The word 'bead' itself has an interfaith origin. It is purportedly derived both from the Sanskrit budh, which refers to self-realization, and also from the Saxon verb hidden, to pray.

Suppose however that each bead (distinctively shaped, coloured or marked) was associated with a particular insight, rather than the traditional devotional 'prayer'. Some are already used in this way.

The insight might be peculiar to the individual, or of importance to fruitful ways of thinking in response to the environmental challenges of the individual or a group. In other words the insights chosen could be idiosyncratic and personal, or selected from those on offer (and widely agreed upon) in society. They might indeed be associated with injunctions on how to act, but they might equally be chosen for their cultural associations. Just as people may surround themselves with a library of books, a set of pictures, or a collection of music recordings, in this way they would provide themselves with a highly portable reminding device for insights that they find important to their lives. Some people collect symbolic figures for amulets, somewhat to this end.

The device is simple and its variations could be numerous with the help of aesthetic flair. More challenging however is to increase the organizing and associative power of the device to sustain the pattern that connects and holds meaning in a person's life -- or in that of a group.

Clearly some would choose to obtain ready-made forms of cultural rosary, with the associations of each bead carefully defined. Many groups might choose to provide such devices for adherents for their worldview. The rosaries of the Catholic Church are of this type. Others might choose to build their own in the light of insights that they consider important. Some might select them on purely aesthetic criteria. But there are other intermediary approaches that may extend the value of such devices.

Framing the design challenge

This note endeavours to avoid an 'exhaustive' exploration of the possibilities. So in considering further design options, it is useful to offer some associations to catalyze further reflection. The design challenge might borrow features from:

- the 'open source' philosophy of software development, in which many contribute to improve designs with particular purposes
- the design of religious rosaries, whether of East or West
- geomancy and feng shui consideration of complementary influences on a place or situation
- aesthetic selection of complementary pieces for a musical evening, an art exhibition, a poetry reading, or a gastronomic experience
- design of any set of injunctions (Kiplings If..., Eightfold Way, Ten Commandments, etc)
- design of any set of principles (Universal Declaration of Human Rights, Global Ethic, etc)

A strong inspiration towards use of beads to hold cultural insights comes from Hermann Hesse's Glass Bead Game (1943) that has impelled many to construct emulations on the web (search 'Glass Bead Game resources'). Charles Cameron, in considering this possibility, notes: Rosaries are meditative devices which use beads to represent a series of prayers on a sequence of...mysteries...By analogy, the Glass Bead Game is an abacus of prayer... More specifically, it is a stringing together of ideas drawn from the whole range of human culture, within a formal meditative structure, to engender in its players, Hesse tells us, a state 'virtually equivalent to worship', a 'direct route into the interior of the cosmic mystery" (http://home.earthlink.net/~hipbone/Consider.html).

There is a need to distance the proposed cultural rosary from some of the widely publicized faith-specific associations of its use, notably within the Catholic Church where it has been closely linked with devotion to Mary. In its present form, the rosary was developed in Carthusian monasteries in the 14th and 15th centuries. It consisted of the Scriptural verses of the Hail Mary with 50, then 150, little "inserts" (clausulae) added after the name of Jesus. The clausulae became the "mysteries" and were divided into three sets of fifty each. Finally, the clausulae or mysteries were reduced to the present 15 mysteries:

- Joyful mysteries: Annunciation; Visitation; Nativity; Presentation; Finding in the Temple
- Sorrowful mysteries: Agony; Scourging; Crowning with Thorns; Carrying of the Cross; Crucifixion.
- Glorious mysteries: Resurrection; Ascension; The Descent of the Holy Spirit upon the apostles; The Assumption. The Coronation

Part of the current tradition has it that 29 'roses' are associated with the rosary (http://www.teleport.com/~rosary/secret.htm). However this Catholic tradition continues to be subject to reinterpretation. Many authors have taken the 1973 suggestion of the American bishops and proposed new mysteries for the rosary, for example:

- five mysteries dealing with Christ's public life: Baptism, Cana, Sermon on the Mount, Prodigal Son, and the Transfiguration.
- a Scriptural rosary intended for Eucharistic devotion: the Wedding Feast of Cana, the Feeding of the Multitudes, the Great Teaching, the Passover of Our Lord, the Emmaus Eucharist.
- for working people with families, five "Ordinary Mysteries": Making a Living; Raising a Family; Being a Good Citizen; Practicing Religion; and Balancing Responsibilities.
- five mysteries for a "Woman's Rosary": Mary the Woman, Mary the Wife, Mary the Mother, Mary the Neighbor, Mary the Friend.

A number of web sites assist in the design of 'memory beads' or bracelets. One traditional use is by the Iroquois who had no writing system and depended upon the spoken word to pass down their history, traditions, and rituals. As an aid to memory, the Iroquois used
shells and shell beads. The Europeans called the beads, whether as bracelets or belts, 
*wampum*. All *wampum* belts function similarly.

Each instance, or each belt, represents a particular speech event -- a single talk, or a particular council meeting, or a specific treaty. From native perspective, the beads carry the information, or the speakers' words. Variables are: an array of beads; bead color; bead size and shape; belt width (number of strands); belt length, and, possibly, geometric figures. Acting on these variables are these methods: record speakers' words; prompt messenger's memory; prompt reciprocal exchange. ([http://www.nativetech.org/links/beadwork.html](http://www.nativetech.org/links/beadwork.html))

Frances Yates discusses *The Art of Memory*, 1966) the historical use of memory palaces, gardens and theatres to provide structured surfaces on which insights could be imprinted. The work of one practitioner, Raymond Lull, is partially available on the web ([http://www.geocities.com/Athens/Parthenon/4572/cont.htm](http://www.geocities.com/Athens/Parthenon/4572/cont.htm)). The practice of building memory palaces -- in which loci were made available for the placement of remarkable imagery that would stimulate one's memory -- did not, however, become completely discontinued after the sixteenth century but became marginalized to the Neoplatonist movement, which adopted its mnemonics for the purpose of enhancing the Hermetic philosopher's magical grasp over nature ([http://users.massed.net/~rsmyth/writings/diss/ch2.html](http://users.massed.net/~rsmyth/writings/diss/ch2.html)). This would be one reason for the modern neopagan interest in symbolic necklaces.

**Design specifics**

Several design dimensions might be considered:

- **Size**: Clearly a cultural rosary might have only a few 'beads' -- as is the case with some charm bracelets. Alternatively, it might be increased in dimension. Examples in prayer usage include:
  - The 108 *mala* beads of the Buddhist rosary or more (112 in Japan), although lay persons may use only 30 to 40 -- as with European 'worry beads'.
  - The Tibetan variant has 108 plus 3 (separating groups of 27) plus 1 (used like an abacus to count up to 10,800 prayers). The 'wrist mala' is usually made up of 22 beads.
  - In Hinduism, the number of beads on a prayer strand varies from 18, 27, 54 to 108 -- but there is always an extra bead inserted -- called the *meru*, to indicate when the chanting cycle (*japa*) is finished ([http://www.hubcom.com/tantric/mala.htm](http://www.hubcom.com/tantric/mala.htm)). 108 is also the number of names of Lord Ganesh ([http://www.mantaroonet.com/108ganeshnames.html](http://www.mantaroonet.com/108ganeshnames.html))
  - For Muslims the bead-string (*Tasbih or Suhba*), consists of 33, 66, or 99 beads, and is used for counting devotionally the names of Allah -- a 100th bead terminating the cycle. In Arabic, the word for "rose" (*ward*) is just a vowel away and related by root to the word for "invocation of sacred Names" (*ward*); thus the rose symbolism in the Sufi way (connoting remembrance), and the name of this device in Christianity: "rosary."
  - Catholic rosaries have 50 beads, namely 5 groups of 10; Eastern Orthodox may use 100. But the number of beads on a chaplet, or rosary, depends on the number of prayers making up each particular form of devotion (a full rosary consists of one hundred and fifty *Hail Marys*, fifteen *Our Fathers*, and three or four beads corresponding to introductory versicles and the *Glory be to the Father*, etc). Lay people commonly have beads representing a third part of the rosary. Traditionally, 'tensers' were little pocket rosaries of 10 beads, one fifth of the standard five decade rosary; the 'pocket' or 'wrist rosary' or 'tenner', was traditionally a man's prayer bead.
  - Anglican prayer beads may comprise four groups of seven beads called *Weeks* which are divided by four Cruciform beads (the *Weeks* are a reminder of the days of Creation, the temporal week, the seasons of the Church year, and the seven Sacraments).
  
  - Associational 'cross-links': Circlets of beads are typically traversed sequentially as a guide to a specified number of prayers -- a quantitative emphasis within a cycle characterized by 'rote' learning. More intriguing perhaps is the possibility that the design also evokes associative links 'across' the circle between non-contiguous insights -- an associative or networking emphasis that may provide a non-linear, integrative complement to the 'cognitive tunnel' of the circumferential cycle. From an aesthetic perspective these associations might be based simply on complementary colours. Clearly when the beads are separated into clusters, there is a complementarity between the clusters. Presumably beads might be used as mnemonic devices for a succession of verses in an extended poem, where there were poetic associations between the verses independent of that sequence -- just as there may be associations between non-contiguous different prayers. The question is how complex might be made the pattern of associations across the circle. How can a cultural rosary be made to carry a very dense pattern of associations in this way?

- **Regular vs Other patterns**: The traditional circlets are divided into regular groups with a specific number of beads. There is a numeric 'logic' to the structure and any complementarity. A more aesthetic approach might rely on other more subtle ordering devices such as the key features of a story, or the aesthetic associations in a poem to other verse themes (each represented by beads) -- irrespective of how their elements were structured quantitatively.

- **Complexity**: Traditionally the circlets are designed to provide mnemonic support for a number of items that are a real challenge to human memory, especially if the items are distinct in qualitative significance. So 'lay' variants may have a much smaller number than those used by 'professionals'. Whether in terms of quantitative 'size' or qualitative 'complexity', how much insight is the cultural rosary to be designed to hold? Clearly one design purpose is to enable the user to access and reinforce a higher order of insight than can be associated with any one bead, sequence of beads, or pattern of beads -- a kind of 'cognitive overtone' engendered by experience of such parts.

- **Variability**: Traditionally the number of beads in a circllet has been fixed. Intriguingly, many websites now offer users a design-your-own approach to prayer beads -- where it is clearly up to the user to define the number, in the light of the use to which they
are to be put. Thus another non-traditional approach is to consider the possibility of varying either the structure of the cultural rosary or the manner in which it is used. It is relatively easy to add or remove beads from such a circket, according to the mnemonic challenge of the moment. An alternative is to explore the circket from a different starting point in the light of the condition faced. In this way the cultural rosary could potentially hold a far denser network of associations than the person needed to explore at any one time. This introduces a temporal, rather than an atemporal, dimension into the function of the cultural rosary. Of course there is always the possibility of using several different cultural rosaries for more specialized purposes.

- **Circles or Otherwise**: Traditionally there have been advantages to 'centro-symmetric' organization as a circket or rosary. An interesting extension is the yantra (similar to a mandala) in which the geometric shape is effectively formed by a network of beads -- and might be worn as a multi-threaded necklace. Note that many more complex necklaces are like yantras in which the neck is at the centre -- the same is true of yantra-patterned ponchos. These networks would bear some relation to semantic networks (http://www2.ios.com/~davehuge/MathArt.html) or mind maps (see below). Alternative possibilities should of course be envisaged. Note that in Judaism analogous use is made of the 600-plus fringes of a prayer shawl. It is unfortunate that lessons cannot be learnt from the Inca kipu or quipu -- knotted and coloured mnemonic string arrays used both for messaging and for accounting (analogous to the abacus) -- and presumably wearable, like a shawl (as computer displays will shortly be). Of course, sets of beads, or their equivalent, are often kept unstrung and used to hold shamanic meanings -- as with cards sets, like the Tarot. Ironically, it is also true that some in the past have recommended use of the joints of fingers to provide 12 or 20 memory loci (see various applications http://www.geocities.com/ Athens/Parthenon/4572/cont.htm)

**Content and function**

As with meditation and prayer beads, the purpose of the cultural rosary is primarily for personal use as a mnemonic device -- as cultural jogging trails through which to jog the memory, possibly in a social setting. Justification for such use is explored in the literature on mnemonic devices. Possible uses might be clustered as follows:

- **Ethical injunctions**: This comes closest perhaps to the traditional religious use. A cultural rosary or mala might for example be used to hold the 30 articles of the *Universal Declaration of Human Rights* -- and the poorly explored, mutually reinforcing, pattern of associations amongst them. Given its interfaith status, a cultural mala might notably be used to clarify the confusing pattern of associations amongst the principles in the *Global Ethic* signed at the Parliament of the World's Religions (Chicago, 1993: see http://www.uni-tuebingen.de/stiftung-weltho\/\_st\_\_3\_\_e.htm). The same could be done with the 19 principles of the *Universal Declaration of Human Responsibilities* (http://www.lucist\_\_trust.org/goodwill/hum-resp.shtml)

- **Sustainability initiatives**: What might be the key insights of sustainability that one might want to remember in relation to personal or household preoccupations (as articulated for example by the Global Action Program, http://www.globalactionplan.com)? How could they be transformed aesthetically from constraints and obligations ('oughts') into insights which enchant and renew the spirit? Through association with witticisms, melodies, etc? How might the approach be adapted to the themes of the poorly interconnected 40 Chapters of *Agenda 21*?

- **Physical survival kits**: There is a case for using such circles as memory joggers for physical survival in the event of disaster. Military 'dog tags', worn around the neck, could even be adapted to this end.

- **Cultural survival kits**: What could be built into a necklace to hold mnemonically the cultural history of an endangered group, such as a displaced minority in a long-term refugee camp? Clearly the beads could be reminders of stories. To be successful they might also have to hold something like a game that could be played -- evoking associations between beads across the circket. As with the sustainability variant, they might well hold basic community economic, health and organizational information -- to mitigate against erosion of collective memory. How might they encode the systems of Hindu *jataka* tales, Aesops fables, or the Sufi Nasruddin stories?

- **Conflict resolution and dialogue kits**: It is possible that such a circket could be used to encode mediation steps and guidelines -- procedures to be explored to de-escalate a crisis between individuals or groups. Again they might have to be built into a story such that each bead was both a stage in a story and an exemplification of a procedure. It is possible that beads could be used to indicate conditions of dialogue -- suggestive of how they can be transformed into other more healthy conditions.

- **Psychotherapeutic reminders**: Recognizing that a healthy psychic life may be vulnerable to destabilizing internal and external factors, what reminders could be encoded into a cultural rosary to trigger appropriate compensatory response -- to avoid an unwelcome habitual one? Many traditional sets of rules and taboos could be seen in this light. How might it be used by an individual vulnerable to substance abuse (cf the various '12 step' techniques)? For example, the Hare Krishna movement has a recommended minimum standard of *japa* meditation for devotees that involves the chanting of sixteen rounds on *japa mala* beads, with the more skilled aiming for 32, 64 or more such rounds.

- **Spiritual discipline guides**: This is the prime traditional use of prayer beads. According to Antonio de Nicolas (*Powers of Imagining*, 1986), rosaries are ideal for developing the "will". They can be used at night to set the "will" ready for the next day ("things to remember to do"), first and foremost to examine one's conscience at noon and at night; to identify acts of the will to do and mark them in the rosary when failing; to count how many times one did not do what had been intended. Rosaries are very
interesting "memory-points" for meditation, with each meditation parcelled out to individual memory beads according to the five senses to be applied distributively to the image of the memory-point. This use of the rosary by itself crosses cultural boundaries, since all do the same when doing meditation of this type, using the imagination to build forms impregnated with one's own sensations.

- **Know-how mnemonic devices**: There is a case for exploring use of such devices as checklists (or more) to handle complex procedures and responses to their conditions of failure. Could the insights of a computer training course, for example, be usefully encoded on such a circle as a reminder of what to do under certain conditions? What about complex recipes, or even sets of recipes -- or control of an electrical generator or pump, or horticultural cues? Why might that be preferable (for some) to manuals and other devices? They could at least be hung on a convenient hook as decoration. Shamans in traditional cultures have worn such mnemonic devices, notably as a status symbol. In aging societies, they might well have a role at a particular stage in the life of the elderly or those succumbing gradually to memory deficiencies. For students, they might be reminders of knowledge acquired (or yet to be acquired) in any educational course. For some they might be preferable to a computerized 'personal organizer'.

- **Conference summarizers**: Whether purely as a public relations gimmick, or as a serious mnemonic aid, conference participants could be given some form of cultural rosary as a reminder of the agenda points (to be) evoked and possibly agreed upon. This would be reminiscent of the Iroquois use of wampum in relation to their council events. More intriguing might be conferences where participants used the range of beads selected for their rosary to signal the points they considered of importance to other participants.

- **Design of a new being**: One website suggests that memory beads are access markers of any being. They are not fanciful elements of a computer. The "beads" are a visualization of memory prerequisites for the design of a new species, the Elobeing. The numbers indicate the required sequence of growth. They parallel development of consciousness elements as an Elobeing grows. 

- **Money beads**: Forms of money bead, often strung together or worn, are common in many traditional cultures. Curiously plastic beads of different colours (and therefore value) were long used for minor cash purchases by members of the Club Mediterrannée -- and worn as bracelets or necklaces (the beads are not strung, but can be quickly linked into each other, or removed from the necklace). Money has been defined, even within high finance, as a unit of confidence or value. Some usages of such money beads were of greater importance as signifying status. It is possible that in a post-monetarized society, exchanges of value may be more associated with the insight, or other, associations of the beads than is implied by their monetary value. The trading of marbles by children, according to rarity value, reflects an aspect of this tendency -- as does some trading in bracelet charms.

- **Organizational learning**: Inspired by the glass bead game metaphor, a study of organizational learning by Peter Delisi concludes: 'To return to our earlier metaphor, we can say that the glass bead game symbolizes each of us as individuals coming together to exchange and build upon the knowledge that each of has. But our ability to do this for the overall good of the organization depends vitally on our having developed some ability to transcend our functional barriers. In the glass bead game, a common language and grammar performed this role. In the organization of the future, interdependence will play the same role, as it truly unites people in a common cause. As we enter an era in which the value of information and knowledge will exceed that from our traditional products, can we ask for anything less?' DeLisi discusses how the game might be applied in practice.

- **System holders**: Distinct from specific know-how and insights, one of the challenges of such meaning malas is to hold systems of insight as patterns, rather than solely in terms of their individual elements. How can whole systems be effectively held by such devices? How much insight can be rendered explicit in the design and how much must remain implicit? This is the distinction between the reminder dimension and the meditative catalyst dimension. As system holders, the level of understanding is shifted to a more integrative perspective -- the cultural rosary then functions somewhat like an enjoyable conceptual prosthetic!

**Complex examples of cultural rosaries**
It is not immediately obvious from web sources the degree to which distinct insights are attached to beads, as opposed to its use as a counting device for a single repeated prayer -- possibly chanted. In fact, tradition has it that the rosary was instituted for illiterate lay people to enable them to repeat a single prayer, in contrast to recitation of all 150 psalms by monks. Clearly reflection on many individual mysteries (Christianity), virtues, hindrances (Buddhism), or the names of Allah (Islam) or Ganesh (Hinduism) implies a higher degree of memory. But relatively little is indicated in web resources concerning how any of these weave together to constitute a larger pattern of meaning rather than a simple sequence (whatever its implications as a spiritual discipline). This is the challenge in many areas of society, namely the contrast between 'cognitive tunnel vision' imposed on the uninitiated and the challenge of more integrative comprehension.

In searching for examples to present, the criterion has been richness of interaction across any circumferential sequence, as well as feasibility of construction:

- **Periodic table of chemical elements**: This classic tabular presentation of 100-plus atoms has many complex dimensions in addition to the sequential increase in atomic number. Each type of atom could be represented by a bead. These are clustered into groups, but there are correspondences between atoms in a similar position in any group -- so colour coding could be used to great effect. Whole chemistry lessons could be triggered with such a mnemonic aid. It is ironic that the 99 names of Allah are known to many, but the names of all the atoms are known to relatively few -- even amongst students of chemistry. It is also true that many necklaces are made of stones corresponding to elements in different parts of the periodic table. The table can also be used as a template to explore the degree of ordering of the complete range of human activities (Judge, 1980-96). It is curious that the number of elements in the whole periodic table is of the same order as the number of beads on many conventional rosaries, and the smaller rosaries use numbers of beads reminiscent of the sub-groupings of the periodic table.

- **Metabolic pathways**: The set of basic metabolic pathways could possibly be represented by a cultural rosary, although this is far more challenging than the case of the periodic table of elements. However it is worth noting that a songbook has long been in existence to provide students with an aid to remembering the stages in any one process through the verses of each song (Harold Baum, 1995); there is an extensive website on medical mnemonics (http://www.medicalmnemonics.com/)

- **I Ching**: This may provide one of the most complex feasible examples (see diagram) in which the traditional hexagrams could be represented by beads. The links between non-adjacent hexagrams are explicit. It would also constitute a highly marketable artefact -- although no example appears to be cited on the web. It is especially interesting because of the subtle metaphorical associations relating to each hexagram and from it to others. This is illustrated, to some degree, by the web experiment based on the I Ching with respect to its different significance for dialogue, lifestyles, networking, or related concerns (click on the diagram). But the diagram, if converted into a mala string, makes the point that the user has to project insight into the individual bead-hexagrams (as discussed by Frances Yates with respect to mnemonic loci) before being able to derive insight from the structure. This is a stage significantly beyond that of simply memorizing the names of each hexagram (as is done with the names or attributes of Allah or Ganesh).

- **Runes**: Runes inscribed on stones formed an ancient Germanic alphabet of 24 signs (3 groups of 8, possibly with one additional blank). They were used for writing, divination and magic throughout northern Europe, Scandinavia, the British Isles, and Iceland from about 100 BC to 1600 AD. In recent decades they have been widely explored again for divination purposes. Each rune has esoteric meanings and properties associated with it, beyond its mundane meaning. Each translates into a word or a phrase signifying concepts important to the early peoples who used them, representing the forces of nature and mind vital to their survival. Each rune has a story or poem attached to it, and a relationship to a Norse God. [extensive web resources, see http://w1.2777.telia.com/~u222200871/eindex.htm]. Although single stones are marketed as pendants, there does not seem to be any effort to link them to form a string for any mnemonic or other purpose, but there are clearly resonances between them unrelated to their 'alphabetic' sequence. For example, with respect to runic cycles, I G Hráfhnjón notes: "The runes manifest in polarized pairs of heitirünar and myrkünar into a twelve-fold spherical pattern. Within this sphere are twelve divisions, each containing a pair of runes. These divisions represent a 'concept'. When the concept forms, the runes manifest within it, for they are that concept... This is how the runes ordered themselves in a linear way. The runes also manifested in a cyclical pattern into a pattern resembling a sphere divided into eight sections, representing the cosmic atts. As the runes found their way around the sphere, they gathered in groups of three. So the first rune is grouped with the first runes, the second rune is grouped with the other second runes, etc" (http://www.skergard.org/U3hrafn.htm)

More generally, all coherent sets of concepts can be considered as potentially encodable onto mnemonic devices such as the proposed cultural rosary or meaning mala. The intriguing question is whether the concepts can be understood as constituting a system of links that integrates the set in a manner that is other than a sequential checklist (Judge, 1979). In other words does the set have a higher degree of ordering and can it be reflected in the distinctions given to individual beads and groups of beads and how they may be understood as related? The I Ching diagram illustrates the potential complexities of such linkages.

'Activating' the significance of the cultural rosary

The rosary or mala can of course be used purely as a memory tool -- and a form of 'qualitative counting'. The question is how to render it more 'active', just as the abacus can be used for mathematical operations. Can it be more than a reminder -- with the risk of decaying into a memento?

In Catholic usage, the rosary is made up of two things: mental prayer and vocal prayer. Mental prayer is none other than meditation of the chief mysteries of the life, death and glory of Jesus Christ and of the Holy Mother. Vocal prayer consists in saying fifteen decades of the Hail Mary, each decade headed by an Our Father, while at the same time meditating on and contemplating the fifteen principal virtues
which Jesus and Mary practised in the fifteen mysteries of the Holy Rosary.

Those who use strings of beads for prayer or meditation would consider such use more than sufficient.

Hermann Hesse alluded to the possibility of using beads in a game and there are a number of web efforts (of highly variable quality) to give form to this. There are also related discussion lists. The purpose here, however, is to focus on simpler mnemonic devices -- although some of the game insights may indeed be relevant.

Three other possibilities come to mind:

- **Casting a rosary**: There is some interesting scope for 'casting' the rosary or mala so that it falls in some unpredictable configuration of overlapping loops -- with some normally distant beads touching one another. This would be intriguing for the elaboration of alternative story lines, or to capture unusual conjunctions of conditions or events requiring special action.

- **Metaphoric diagrams**: Traditionally beads, or bones, are cast to form a pattern from which significance is derived. It is possible that current interest in the cognitive value of digrams on computer interfaces could be related to casting, or arranging, beaded structures in order to provide a digram to hold a particular pattern of significance between the elements (see http://www.cl.cam.ac.uk/~afb21/publications/thesis/index.html)

- **Combining rosaries**: Several rosaries could be allowed to intersect, linking quite different sets of stories or insights. But more interesting is the possibility of draping them around a sphere (something like a balloon, a melon, or a pumpkin) so that each circle intersects the sphere in a different way, intersecting the others (as 'great circles') -- and possibly with 'locking' features. This would then depict a larger set of insights or stories and their relevance to one another -- possibly from different clans, totem groups, or belief systems -- thus brought together to form a whole. Something of this kind (a stone draped with chains of garlands) was known in Hellenic times as the omphalos (http://www.cs.utk.edu/~mclennan/OM/index.html) and the term has now been taken up by Neopagan groups. The most famous omphalos was at Delphi, situated in the center of the temple of Apollo; it was supposed to mark the center of the earth. An omphalos was viewed as the holiest object at various oracle centers in all the lands bordering the Mediterranean Sea. Such intersecting chains around a sphere are also reminiscent of the tensity structure basic to unusual architectural forms (https://www.lactusinpraesens.org/docs/challhar.php).

Anthropologist Diana James, specializing in Australian Aborigines, comments: 'What mechanism would be used to determine the pattern of 'draping' of the 'great circles', would random or pre-determined patterns ensure that the circles intersected at points that 'depict a larger set of insights or stories and their relevance to each other'? The Delphi omphalos presumably worked as an oracle on the basis of chance/ or random patterns believed to be guided by the gods, therefore coincidence was trusted to reveal 'truth'. Does this imply a system of coincidence to organise the 'draping' and the 'locking' patterns depending on the guidance of the 'hand' that drapes, or a mathematically calculated 'random chance' throw from a robotic hand, or what? It's interesting to consider what determined the pattern of Aboriginal songlines across Australia. A similarity to the draped omphalos occurs to me in the way these sacred 'rosaries' were lain across the ground, intersecting at various nodes or 'locking points'. The significance of the complex interrelations between songlines being known only to high degree initiates. The songlines themselves are like rosaries, each sacred site is remembered by the mnemonic device of stanzas in the story song, recited like one recites the rosary. Similarly to priests, the senior custodians of the Dreaming, the song men and women know many more 'beads' or sites on the rosary or line, fewer are known by lay people. Recitation of the songs for each site is a sacred act of prayer or meditation done in community to edit the group and individual souls and keep the Dreaming alive.' (personal communication)

In considering opportunities for encouraging popular use of any 'cultural rosary', it should be recognized that there is already much enthusiasm for the non-linear, associational value of related devices (as is evident from the web). The challenge is more how to distinguish what mnemonic role a cultural rosary could perform that would enhance integrative understanding in ways not already explored by devotional, magical and game-oriented constituencies, or by those marketing particular products.

**Computer-related issues**

Although the emphasis in this proposal is in favour of a very low tech approach with a very high cultural content, the possible interface with high tech approaches should not be ignored (notably in the light of the many web experiments):

- **Beads as data storage media**: Technology is advancing in ways which already allow much data (including images) to be stored on products that could look like individual beads. There is no reason to exclude the possibility that a particular bead could, whenever convenient, be placed in contact with a device that would allow its contents to be displayed. Such a device could be a personal computer, a new-generation mobile internet-phone unit, or some publicly available terminal. Beads could be exchanged like computer disks -- the memory chips embedded in smart cards come to mind -- in fact the wrt rosaries or 'tenners' described above are very reminiscent of how wearable 'data cubes' might look (http://www.rosaryworkshop.com/MUSEUM-tenners.html). One challenge is how to get links between beads to be visually, or otherwise, signalled. Perhaps the rosary string could be 'plugged into' a suitable device to display the cross-linking pattern of associations.

- **Wearable story beads**: Barbara Barry (with colleagues at MIT Media Lab) has articulated a proposal for the development of modular wearable computers as a construction kit for building image-based stories (http://e.www.media.mit.edu/StoryBeads/thesispropfinalweb.htm). This model allows for a distributed group of users to participate in building both personal and collaborative stories by trading images. This is somewhat in line with the 'open-source' philosophy recommended earlier.
- **Mind mapping:** This visualization technique was invented by Tony Buzan and Peter Russell in the 1970s. Several computer-based variants now exist (http://www.mindman.com; http://members.nbci.com/tsalomon/softNeuronEn.html) including one that allows for associational links (http://www.banxia.com/demindmap.html). The presentation of semantic networks -- with ideas represented by nodes that could be beads -- is a suggestive extension (http://www2.ios.com/~davehuge/MathArt.html).

- **Rosary-on-the web:** There are obvious possibilities for constructing and using a web version of a rosary or mala, with as much supporting text and imagery as is desired. It would be relatively easy to offer a website where users could select or design their own. Such possibilities might be related to some of the design issues of the Glass Bead Game on the web.

- **Chryzodes:** Jean-Paul Sonntag has developed software for an aesthetically intriguing centro-symmetric display (http://www.chryzode.org/) based on subdividing the circumference of a circle and establishing relationships across the circle. He uses it to give an aesthetic feel to number theory. Its relationship to cultural rosaries, through encoding information into the nodes around the circle, remains to be explored.

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