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The report from studies in India

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This study is dedicated to the late (Dec. 30, 2008) Shree Vasant V. Paranjpe.

I deeply appreciate His generous efforts and interest in making the practical applications of Vedic spirituality and knowledge understandable and accepted by people coming from and with different scientific and cultural backgrounds and experience. His inspiring comments and thoughts influenced also my ways of thinking and will live and be remembered forever. I consider Him a great forerunner of a fruitful future, which, as I believe, may emerge where science and spirituality meet and cooperate.

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Readers of this report are encouraged to send their questions and comments, which may contribute to improvement of its content, may help to correct possible errors, to clarify statements and will help in planning of future studies. The Author will appreciate such feedback very much.

Figures included here are of low resolution in order to keep volume of the whole file reasonably low. If you wish to receive them in full resolution, please contact the author.

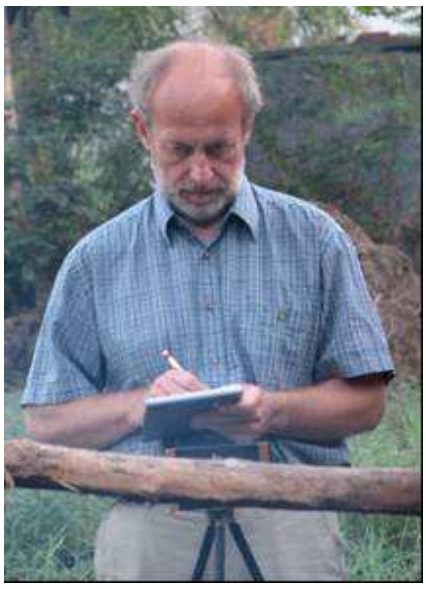


Fig. 1. The author during measurements in Baneshwar. Photo A. Padhye.

Executive summary

This report describes some preliminary results of studies on energetic and environmental effects of Vedic rituals and ceremonies (Somayag, Agnihotra and others), and a new geomagnetic approach to study of Indian temples, sacred groves and landscape management.

Field studies were done in India from December 2007 to January 2008 in two Homa Therapy centres/farms: near Maheshwar on the Narmada River (southern Madhya Pradesh) and in Tapovan (northern Maharashtra). The report also contains some notes from Pune, two sacred groves in the northern part of Western Ghats and Ellora and Ajanta caves (all in Maharashtra).

The Narmada River, one of the most sacred rivers in India, and the only world's large river with great majority of its course flowing from East to West is described in terms of geostrophic effect, which may be responsible for some unusual qualities of this river. Volcanic soils of this area are extremely paramagnetic.

Life Energy Meter, designed according to Wilhelm Reich's concept of orgonometer, was found to be a valuable and useful tool for detecting neo-energetic changes in air around ceremonial places, where Vedic rituals were performed. This device can also measure differences in human personal energetic fields, including energies of particular chakras, and energetic fields of vegetation, including cultivated crops, as well as sacred sites - groves and temples.

There was no general pattern of life energy (LE) dynamics which might be described as characteristic for Agnihotra. Instead, the LE dynamics depends on sites, where the ritual is performed, on vegetation and its physiological activity, songs of birds present around, and on people performing the ritual and present at the site. Agnihotra effects should always be studied in context of functions of the whole ecosystem - the environment, living organisms and people. From this point of view, regulating or homeostatic properties of Agnihotra may be discussed. Released life energy probably interacts with major physiological functions of organisms, including photosynthesis, and further studies are needed to explain the processes behind and the character of this dependence.

The big ceremony of Somayag was described in terms of intensive and dynamic changes and transformation of life energy. Some distinct phases of this ceremony were described, with their processes of production, uptake, release and transformation of life energy. Materials used for the ceremony (soma - *Ephedra* stalks, a trunk of *Ficus racemosa*, leaves of *Poa cynosuroides*, milk and many others) have extraordinary energetic properties, and these preliminary findings demand further studies, which effects might have a special importance for material technology.

Advanced performers of Vedic rituals can feel energetic fields produced and their dynamics, although they describe in other than scientific terms. Further studies will need a close cooperation of researchers and ritual performers. By the other side, LE measurements during rituals may help their performers to see effects and improve performance when necessary.

Sacred groves receive growing attention among the scientific community, as biodiversity hotspots and relics of former natural ecosystems, due to their important role in landscape hydrological processes, and as example of conservation practices based on traditional knowledge. However, it was not known before why - in scientific terms - a particular forest spot was declared as the one to be protected by local communities. Studies described here explain the role of geomagnetic diversity (magnetic vortexes, anomalies) in choice of a forest spot to be considered sacred. This produce new questions about magnetic field as an ecological factor and its role in growth of trees, occurrence of plant and animal species, health and consciousness of people.

Geomagnetic field characteristics was found essential also in more recent temples: in choice of a site for temple construction, as well as in use of paramagnetic construction material, probably in order to affect physiology and/or consciousness of people visiting the temple.

Some data on geomantic characteristics of visited places are given (BSM/Bovis values and geomantic colours). From this point of view, these powerful or sacred sites are characterised by elevated energy and special shift of frequencies to higher ones. However, this may be considered additional information about the site, and so far has no direct link with terms of scientific description. Trying to find any relation between these approaches may be the aim of further studies.

In general, further studies on these so complex and diverse, context-dependent relationships need a close cooperation between academic natural and social science, alternative sciences and parasciences, Vedic science and Vedic spirituality, where different backgrounds, experiences and viewpoints have to be respected and integrated into a complex, multidimensional 'big picture'. Such approach may lead to resuscitation of traditional knowledge and its integration into energy- and cost-effective management practices of sustainable societies both in India as well as over the world.

1. Introduction

Having some previous experience in studying effects of Agnihotra ash on biotic communities, in November 2007 I was invited by Dr. Ulrich Berk of German Association for Homa Therapy to come to India to do some measurements which would contribute to explanation of effects produced by performing Somayag, a large Vedic ceremony, planned for the end of December 2007 to be held in Maheshwar, south-western Madhya Pradesh, India.

Time for preparation of study programme and equipment was very short, and only scarce information was available on what the Somayag really is, therefore, I could only decide to do some preliminary observations and measurements, having in mind the possibility to formulate further more advanced programmes based on these observations, to be implemented for future occasions.

My visit to India lasted from 19th December 2007 to 15th January 2008. The itinerary was as follows:

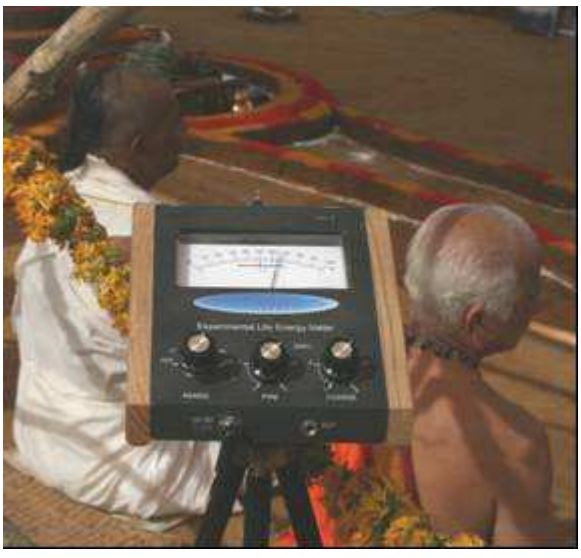
- Dec. 20 – 31: visit to Fivefold Path Mission, Homa Therapy Goshala near Maheshwar on the Narmada River (Distr. Khargone, Madhya Pradesh).
- Jan. 1 – 6: visit to Tapovan Homa Therapy Farm (Distr. Jalgaon, Maharashtra).
- Jan. 7 – 8: visits to Ellora and Ajanta Caves.
- Jan 9 – 15: visit to Pune (Departments of Zoology at Modern College and Abasaheb Garware College; stay at University of Pune; field trips to Valane and Kalkai sacred groves (in northern part of Western Ghats) and to Agnihotra farm in Baneshwar.

2. Methods of study

According to Vedic science, "At sunrise the many fires, electricities, ethers and more subtle energies emanating from the sun extend all the way to the Earth and produce a flood effect at those coordinates where the sun is said to rise" (Paranjpe 1989). Then yajnyas (ritual, i.e. strictly determined fires, offerings and mantras), as this system of knowledge explains, purify the atmosphere and allow better absorption and transformation of incoming solar/cosmic radiation and its interaction with energies of the Earth, soil, water and living organisms.

Therefore it is postulated that energies of multiple characteristics ("electricities" in plural) are involved, and at least some of them act at "a more subtle level" than these considered in classical physics or understood as conventional ecological factors when the effects of natural energies on biotic processes are studied.

This approach demands to consider the challenge of detecting and measuring energies which are not studied in conventional science, or their importance is not adequately understood.



2.1. Measurements with the Life Energy Meter

For this purpose the Experimental Life Energy Meter model LM3 with Vacuum Tube Probe LM-01AC, manufactured by Heliognosis, Canada (www.heliognosis.com), was applied in investigations. This device is an electronically enhanced version based on Wilhelm Reich's (1981) concept of Orgone Meter. Living organisms can emit or absorb from their environment a kind of energy which can easily be detected with this device, both by direct contact with a probe, or from some distance in air. Also, the energy measurable with it is constantly present in air, with spatial and temporal variability of its amount.

Fig. 2. Measuring Life Energy (LE) dynamics during the Somayag ceremony with the Life Energy Meter.

The phenomena it detects, according to manufacturers, has been known by several names including orgone, zero point energy, chi or prana. However, as Vedic science distinguishes four types of prana, it is not clear which spectrum of it is detectable with this device. Therefore one should take in consideration that even with this device not all energies involved would be measured.

This energy form(s), detectable with this device, will be defined here as LE (Life Energy). Discussion what is the real nature of LE remains beyond objectives of this study; however, some characteristics of it, resulting from observations, will be described here.

The life energy meter was fixed on a tripod and powered by 12V rechargeable battery, which was placed at some distance (at least 1 m) to avoid any interferences (or keep them at a constant level). Also it is important for people not to approach the device or its probe, as their personal energy fields affect the measurements to a great extent if closer than 1-1.5 m. It is also necessary to switch the device on at least half an hour before starting the measurements to power it up for obtaining stable results.

The data obtained from measurement are relative values, i.e. there are no fixed units of measured energy, and graphs showing energy changes in time (for the place where the device was installed) should be understood as relative changes, from start of the measurements when an arbitrary value was set. Also, as the range and dynamics of energy change was often unpredictable, raw data needed to be recalculated after changing measuring ranges (sensitivity) of the device, and/or after multiple adjustments of its potentiometers if measured values appeared to extend the meter's scale.

Only one such device was available for studies, and it was not possible to obtain reference values, which could explain observed changes due to dynamics of energy changes by ceremony procedures, against the background of natural changes (e.g. as a result of diurnal cycles). Also it was neither possible to keep constant measurements nor to have the device permanently switched on to keep the same initial reference value, due to need of lengthy charging the only battery at limited availability of grid electric power.

It is necessary to keep in mind also that this device can measure the energy in the point of fixing its probe. It means that measurements indicated the energy present at a side of ceremonial places, at the height of about 1.2 m above ground level, with some distance kept for not disturbing the ceremony itself and to not interfere with energy distribution at the ceremonial field. The bulk of energy produced, claimed by performers of ceremonies as moving vertically even up to 12 km, could not be measured.

According to the manufacturer's instruction, this device may also be used for measurements of personal "aura" energies, by scanning a human body along its axis, or with changing distance from the body surface. When scanning, distinct maxima appear at levels where, according to Eastern traditional science, main chakras of the body are located. Taking such measurements one should be sure that no metal object is present along the whole scanning line on the body of assessed person.

2.2. Measurements of magnetic fields

Although measurements of regional and local irregularities in the Earth's natural magnetic field are widely used in geophysical studies, there is still low interest among biologists in considering these differences as an ecological factor. However, even among the oldest forms of bacteria there are magnetotactic species, adjusting their movement to direction of local magnetic field even stronger then they can react to variability of "classical" ecological factors as light or temperature. Many animals, including social insects, migrating fishes, birds, and aquatic or living underground mammals, have well developed structures of magnetic sense, and use them extensively for orientation in space. Even humans have biogenic crystals of magnetite in their brain structures and near pineal gland (Kirschvink et al. 1992); their roles in brain functions and endocrine secretions are poorly known.

Even weak differences in magnetic field can interfere with ions and molecules inside the proteins of living organisms (Binhi 2002). This can affect many biological processes, health (including susceptibility to cancer), appearance of individuals (particularly well seen in case of trees with spiral grain growing on local magnetic vortexes), distribution of populations (some mushroom and plant species), dimensions of social insect colonies and production of honey by bees. In humans, magnetic field differences may also affect mental processes. Braden (2006) postulates that places of low magnetic field favour innovations and mental progress, while people living in areas of high magnetic field preserve their traditional, conservative values and attitudes. Places with a strong gradient of magnetic field sometimes can even produce phenomena of consciousness change, rationally inexplicable for affected people.

Also, Paranjpe (1989) postulates that Homa Therapy atmosphere may be an effective remedy for chaotic effects of changes in magnetic fields.

The AlphaLab Earth Magnetometer (www.scientificmeter.com/magnet.htm, Alpha Lab Inc., Salt Lake City, UT, U.S.A.) with resolution of 0.01 miligauss (1 nanotesla) was used to study local patterns of the earth's magnetic field. This device detects not only the total value of magnetic induction, but also with its long probe rod can determine direction of the main (strongest) magnetic vector at the measuring point, or measure magnetic induction values for fixed directions (e.g. vertical, horizontal, or adjusted to global magnetic field lines).

Paramagnetic properties (magnetic susceptibility) of soils, which are also considered as important factor for biochemical processes in soil where polar particles (including water) are involved (Callahan 1995), and thus significantly enhancing plant growth, resistance to drought and agricultural crop yields, were checked only qualitatively, observing attachment of dry soil particles to a neodymium magnet.

2.3. Geomantic assessment

Geomantic techniques were used in various cultures to detect and recognize the variability of energies present in the environment, traditionally considered as important for biota including humans, which are neither detectable with classic human senses nor with standard physical measuring devices. A geomancer, i.e. a person, sensitive enough to these energies and trained in their interpretation, uses geomantic devices, usually pendulums or dowsing rods of various construction according to the purpose of measurement and personal preferences (resonance between mind, body and the device). Devices act as antennas receiving these energies from the environment, as well as physical multipliers, making small, undetectable muscle contractions visible as pendulum oscillations or rod movements. Sometimes also biometers, i.e. circular or linear scales drawn on a sheet of paper or other surface, are used for quantification of results.

The mechanisms of geomantic sensitivity are still not satisfactorily understood. Some external factors which a geomancer mentally attunes to, received with body and antennas used, produce changes in brain waves, personal energy fields, and muscle tension; this phenomenon is also known in kinesiology. However, geomantic detection should not be considered as totally objective and accurate approach, because physical and mental health as well as emotional factors and even expectations of the geomancer may influence obtained results. Despite the geomancer's training, which is meant to help address these problems, the possibility of error should always be considered when geomantic data are interpreted.

Geomantic picture of an area often appears to be consistent to a significant degree with its geomagnetic map; therefore geomantic survey, which is faster in action than advanced measurements of magnetic induction, may be used for detection of zones, where detailed magnetic measurements are necessary for a comprehensive interpretation.

Karnak and Isis brass pendulums, as well as L-rods (Spanish rods) manufactured by Mr. Grzegorz Ciszak, Poznań, Poland, were used in geomantic detections. When necessary, biometers invented by Ms. Liliana Hilsberg (Warsaw, Poland) were used for determination of energy level according to Bovis/BSM scale and geomantic spectra (colours).

2.4. Dried drops of water

The crystalline patterns of water and solid substances dissolved in water, i.e. regularity, complexity, shape patterns, appear to be excellent indicator of water quality (Schwenk 1976, Kröplin 2004). This approach, contrary to time-consuming, expensive and selective chemical analyses, is more holistic, reflecting not only chemical composition, but also - still controversial for mainstream science - aspects of water memory (which is the background for homeopathic medicine, Sukul and Sukul 2005) and spiritual qualities of water, postulated by virtually all traditional cultures. The main problem in application of such methods for assessment of water quality is our still limited knowledge of how to translate observed microscopic patterns into descriptors of water characteristics and their practical significance. Nevertheless, only a pattern change can inform us that a transformation in water structure did occur. The rule of thumb is that the more regular and complex shapes are found, the better quality of water is and the healthier it should be considered for any use. Previous studies indicated that such highly structured water has better properties of neutralisation of dissolved nutrients and chemical pollutants, and usually occurs in sites considered by local traditional knowledge as sacred ones, or in sites related to ancient cultures.

During the Somayag, drops of tap water have been placed on microscope glass slides, put on a drinking glass on ground of the ceremonial place and allowed to slowly dry out during subsequent phases of the ceremony. Such dried slides were collected and may be then stored for even a long time when dry. Patterns of salt crystals formed during water evaporation were then studied under a microscope.

Detailed results of this investigation will be described and discussed elsewhere later and are not included into this version of the report.

2.5. Algal samples

Samples of microscopic algae, forming biofilms on bottom surfaces and on objects submerged in water, were taken from some places in the channel and a floodplain pond of the Narmada River, from wet soil and ponds in Tapovan which were built there for monsoon water storage, from water bodies near Ajanta and Ellora caves and from a creek in Western Ghats. In total, 19 samples were taken, preserved with formalin and then the species composition and structure of algal communities were determined, using a microscope and standard phycological preparation methods. These samples are available to phycologists interested in more detailed taxonomic or floristic studies.

The main purpose of collecting algae from the Narmada was to have possibility to assess in future, whether and how the enhanced intensity of various *yajnyas* performed there would influence the structure of communities containing the simplest aquatic plant organisms at the site. This is in accordance with a statement of Paranjpe (1989), who advised to study the effects of Agnihotra on less complex organisms for easier assessment of the obtainable results.

3. Maheshwar

3.1. The Narmada River

Fig. 3. a) The Narmada River slowly flowing below the Homa Therapy Goshala in Maheshwar. b) Riparian and floodplain plant communities usually are very scarce there.

The Narmada River is considered as one of the most sacred rivers of India. What is so special in this river?

In fact, it is the only large river of the world with almost all its course directed from east to west, i.e. in the opposite direction to the Earth rotation. Even a large, ca. 280-km segment in its middle course, where Maheshwar is located, is almost linearly straight with only few small tributaries inflowing there. Such hydrologic peculiarity cannot be found elsewhere, and few other world large rivers flowing westward (the Congo, the Loire, the Tajo, the Columbia, and even the Tāpi south of there) have no such long straight courses and relatively large water volumes are driven into from numerous tributaries flowing from various directions.

This direction of water flow on such a long distance leads to so-called geostrophic effect – to retardation of current, to increase water residence time and to tightening horizontal water spiralling in the river channel. The importance and consequences of these factors were brought into relief by Viktor Schauberger, Austrian alternative hydrologist, "water wizard" and inventor of the first half of 20th century. His studies and concepts were collected, translated and described by Coats (2001), among others.

According to Schauberger, in such circumstances water is exposed to the heat of the Sun for a longer period. This increases water temperature and, consequently, decreases its density. This, in turn, decreases its capacity to transport sediments, nutrients and other dissolved substances, but with increased water residence time there is better possibility to achieve saturation and balance of carried substances between water and the riverine bedrock. However, the river does not fertilise soils at its lower course (which due to this remains barren and relatively sparsely populated) and is more susceptible to causing floods during wet periods. Levels of historical large floods of the Narmada can be seen as marked in the Maheshwar Fort.

Local people are aware of low fertility of the river and carried sediments. There are almost no crop fields in the floodplain area. Even natural riparian and floodplain plant communities are relatively poor (see fig. 3b).

Another point of interest is the energetic consequence of water flow in the long, almost straight channel. In case of the Narmada, this results from specific geology of the area, and not from river regulation, as in case of many rivers in "developed" regions. Water in river channels flows in a spiral movement, creating vortexes, which, according to Schauberger, charge it with energies. But when a river forms meanders or braided channels and water passes from one bend to another of opposite curvature, the spin of rotating spirals must change. In such places – between bends – therefore water energy is lowered to a close-to-zero minimum, and as water is even unable to carry sediments, a ford is created where sediments deposit. According to the energy conservation principle, the energy carried by water in fords discharges and radiates into the environment, creating an enlivening "energy cannon".

In the straight channel of the Narmada such discharges only rarely occur (Omkareshwar is such a site), and therefore energy carried by water remains unusually high. Such high energy, order and spiralling frequency, with possible emergence of multiple secondary vortexes, may be responsible for rare phenomena, as creation of lingams, i.e. ellipsoidal stones, regularly eroded from bedrock pieces, quite often found on the river bottom. Such shaped stones are characterised by high energy level determined geomantically, and the river water energy is probably the source of it.

As it was explained above, this water energy is not fertilizing, but purifying. It is worth noting that streams and small rivers flowing westwards were used by Slavonic tribes as sites of feminine energetic cleansing rituals in spring. Such folk customs based on this had survived among their descendants in areas of contemporary western Poland and eastern Germany even till mid-20th century.

The Narmada, with her high connectivity to groundwaters (another feature resulting from the geostrophic effect) and energies so elevated and unique in the world, may really be the expression site of the "breath of the Planet", according to a Shree Vasant's message (Hernandez and Macan 2008), even in its material sense.

Large diatoms (*Synedra* spp.) dominating benthic algal community in the Narmada are biological indicators of environmental stability, contrary to small diatoms (*Achnanthes*, *Navicula* spp.) and green algae dominating a floodplain pool. It is interesting that around the island temple (see chapter 3.6) another diatom, *Gomphonema* sp., present also elsewhere, become the dominant of algal community.

Fig.4. The tributary near Maheshwar in December. Large mats of filamentous green algae are the result of water eutrophication.

There is a small tributary, with low discharge in dry season, inflowing the Narmada in Maheshwar. Large amounts of green filamentous algae almost totally covering its surface are the sign of heavy water pollution with nutrients (eutrophication), originating from agriculture and domestic waste. Although the algae contribute to purification of water, their mass development leads also to secondary pollution when this large biomass decomposes. As Agnihotra ash treatment of aquatic microcosms in my previous experiments led to reduction of these algae and to enhancement of trophic chains in aquatic communities, treatment of pools remaining during dry season with Agnihotra ash might improve their biological functions. Of course, this may help, but cannot totally substitute necessary action to reduce sewage input into waters.

When considering another action to preserve the Narmada's unique qualities at the whole catchment scale, it might be worthwhile to implement an afforestation programme, at least for floodplain slopes, at northern side as the most urgent, and for headwaters and floodplains of tributaries. According to the extended Schauberger's concept, any cooling of ground surface (resulting from shading and plant transpiration) would reverse groundwater (often polluted there) losses to the river, and in consequence will reduce soil water deficit for agriculture, soil erosion and will improve flood security. Such a programme would demand more studies on regional landscape ecological functions as the background for spatial planning. And, of course, such programme combined with propagation of Homa Therapy farms in the catchment area would be more successful and effective in its implementation.

3.2. The terrestrial environment

Even if the Narmada really doesn't bring nutrients to soils near the valley, it is not a serious problem for agriculture there. Volcanic soils are known of their fertility.

The upland landscape is of volcanic origin. Even conical hills, present here and there around, are extinct volcanoes. The bedrock is built of basalt, and soils are the product of weathering of basaltic rocks, mixed with volcanic ashes. There are also many volcanic bombs – basaltic stones scattered on slopes of extinct volcanoes. Some of them are geodes, empty inside, with crystals of quartz or amethyst at their inner surfaces.

Fig.5. A paramagnetic soil sample from Maheshwar farm was almost totally drawn to a neodymium magnet.

These soils appear to be extremely paramagnetic. Almost all dry soil particles become drawn to a strong magnet (fig. 5). This feature, according to Callahan (1995), improves biochemical processes in soil, making nutrients more available to plants and also improves soil water availability. Thus, plants there should be more resistant to drought than those growing on less paramagnetic soils in the same climate zone.

However, there are also some negative properties of soils in this area. Weathering of rocks so rich in minerals produces soluble alkaline salts, which easily become dissolved in groundwater. But in dry periods this solution becomes highly concentrated and these salts precipitate in places where active groundwater seepage occurs during the wet season, mostly in eroded ravines (fig. 6). These salts, when present in shallow groundwater in high concentrations, are toxic to many plants, including popular crops.

Fig. 6. The precipitation of alkaline salts in a place of groundwater seepage which was active in the wet season.

The natural upland vegetation type in this area is dry savanna. Numerous and abundant leguminous plants (the family *Fabaceae*), with their symbiotic bacteria able to fix particulate nitrogen, are the indicator of nitrogen deficiency in soils; this is a rather common feature of dry tropical soils. As the increase of abundance of various leguminous species was noted at sites where Agnihotra is performed, these plants may become even more abundant there with increasing intensity of these fires and area affected. This will contribute to improvement of nitrogen availability in soils and, consequently, better growth of other plants in natural communities and cultivated fields.

Fig. 7. Vegetation on slopes of the Narmada valley near Maheshwar.

The geological structure of this area is responsible for anomalies of the Earth magnetic field. There are numerous small magnetic vortexes. It is worth mentioning that constructions recently built in the residential and garden area, designed by Ms. Anne Godfrey of Tapovan, follow the natural distribution of magnetic fields to large extent. Such magnetically changed places may, in turn, influence human consciousness and other brain processes. The entrance to the amphitheatre there from the riverside is just an example of such a magnetic gate. As it had appeared later that Ms. Godfrey has good natural geomantic abilities, it was possible that she intuitively followed magnetic patterns of the area when designing its development.

3.3. Agnihotra

Agnihotra, the Vedic ceremony of burning pieces of dried cow dung with ghee in a copper pyramid, is performed at sunrise and sunset. Strictly at this time there is an offering of some grains of rice to the fire already made, with appropriate short mantra chanted. The Agnihotra offering is usually followed by short (10 - 20 min.) meditation and finished with chanting another 3-minute mantra (*Sapta Shloki*).

Fig.8. The Agnihotra place in Maheshwar. Photo A. Berk.

Agnihotras, of which LE dynamics were measured in Maheshwar, were performed as a group ceremony, with approx. 40–70 participants, each having his/her own fire on the same small place in open air, surrounded by buildings from three sides and thus protected from winds. There was one tree in centre of the place and some scarce vegetation in soil or large pots around.

During the Somayag ceremony, evening Agnihotra was performed at the Somayag place in conjunction with that ceremony. But once (28th December) it was the start of large gathering of more than 100 people, held at one large circular place, the amphitheatre. And energies of morning Agnihotra the same day (the last day of Somayag ceremony) were measured on the Narmada river bank, where it was performed by a group of approx. 50 people.

During morning ceremonies, from the time of making fire some minutes before sunrise, a steep LE increase was noted (fig. 9). This growth of energy usually continued through the whole ceremony, and near its end stabilised to only slightly decrease after its end. In the moment of sunrise, when mantra is chanted, the energy growth rate (derivative) is often at least slightly higher than typical.

Sapta Shloki mantra often was chanted in the moment of ending intensive LE growth, only once the energy growth was stopped a bit earlier, when birds started to sing.

The intensities of LE growth during morning Agnihotras were slightly higher in days when the large ceremony of Somayag was performed, than in days before it. The most intensive LE growth was noted during the last Somayag morning, 28th December.

The LE growth during evening Agnihotras performed at the same place was similar, but usually slightly less than in case of morning ceremonies (fig. 10). However, after ceremonies an intensive drop of energy level occurred.

Completely different pattern of LE dynamics was observed during a large gathering in the amphitheatre after the last day of Somayag. One could suppose that with much more people performing the ceremony the energy growth should be even higher. But there was even no LE growth, but its decrease, before the moment of sunset. But after sunset (the offering with mantra) a short, only 7-min. growth of energy was noted, followed by slow its decrease. Even the LE growth there was less intensive than during other measured ceremonies.

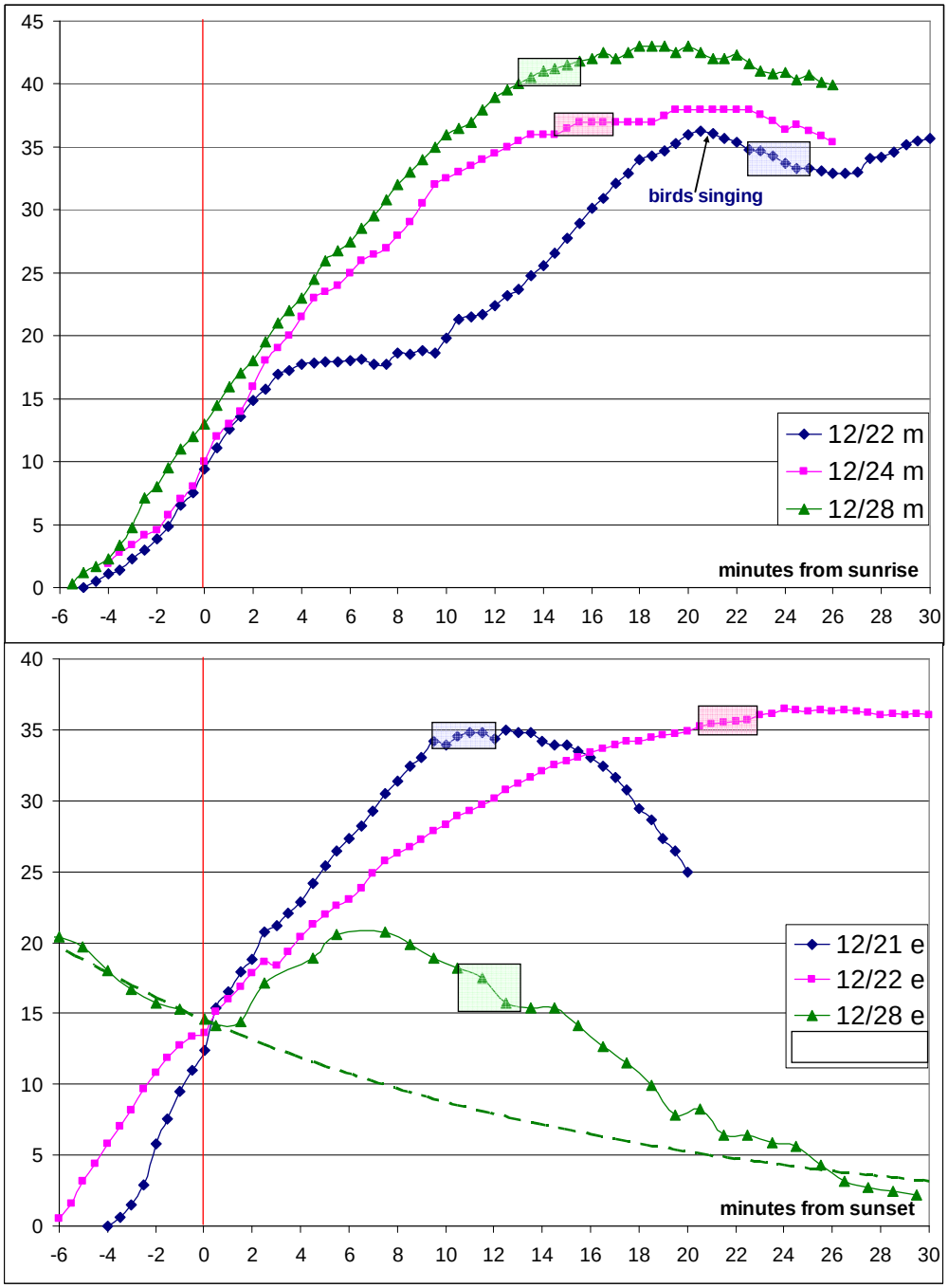


Fig.9. LE changes (corrected and normalised by setting actual sunrise times as 0) during three morning Agnihotras in Maheshwar. Small boxes on graphs indicate time when the Sapta Shloki mantra, ending the ceremony, was chanted.

Fig.10. LE changes (corrected and normalised by setting actual sunrise times as 0) during three evening Agnihotras in Maheshwar. Small boxes on graphs indicate time when the Sapta Shloki mantra, ending the ceremony, was chanted. Broken line denotes hypothetical (without Agnihotra) LE extrapolation for Dec. 28 according to mathematical model based on best-fit power function and measured values from the period before setting up the fire.

Energetic patterns of Agnihotra seem to be site-specific. And here the typical pattern of LE diurnal dynamics had occurred: at the end of day the energy level decreases. It is even possible to model this decrease with a mathematical power function. Therefore the amount of energy produced in Agnihotra may be calculated as the integral of area between the graphs of hypothetical and measured functions.

Then, why it is so small, smaller than in other cases? The standard place for Agnihotras is almost closed. And here it is a large, open area, where energy can freely dissipate over there, can move or become absorbed, e.g. by plants. Also, some irregularities seen at the graph were due to wind, always making the device readings lower.

This puts some light on the nature of Life Energy, which according to these observations should be attributed to air particles or masses, charging the particles, attaching to and moving with them. It is not a form of electromagnetic energy, which would freely move and disperse in any transparent medium, independent of movements of particles of this medium.

3.4. Meditations

The Fivefold Path, besides performing Agnihotra, advises also to perform some meditations daily at fixed times. In Maheshwar these meditations were done also in groups, in the same place as Agnihotras, with fires in standard copper pyramids and mantras chanted during ca. 15 minutes. There were no apparent physical differences between three meditations performed at 10, 12 and 15 hours (local time). About 40 – 50 people participated in each of meditations performed 22nd December (Fig. 11).

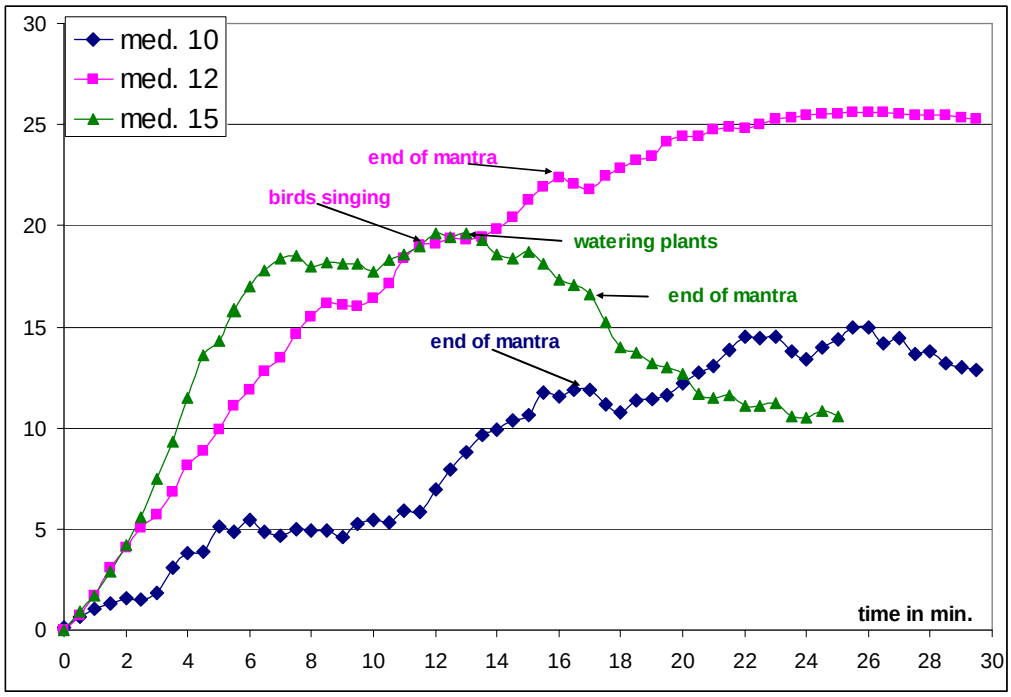


Fig. 11. The dynamics of LE readings (corrected) during three subsequent meditations held the same day.

The three patterns of energy change (Fig. 11) are different. The later a meditation is held, the steeper is the initial LE growth. Ends of mantras always resulted in detectable simultaneous LE drop. But other events in the area may also result in irregular energy patterns. Singing of birds, as was previously seen during Agnihotra, may appear to be an LE consuming process. But the most pronounced LE drop in the final phase of 15:00 meditation was noted immediately after one person working in the area (not meditating at that time) started to water plants growing in previously dry soil. It seems that plants reacted with increased metabolic activity and consumed the excess LE available. Energy consumption by plants may be also at least one of factors making the morning LE growth less intensive then later, as during morning hours their physiological activities are usually higher than later during a day.

Paranjpe (1989) writes that birds sing apparently better and clearer in the Agnihotra atmosphere, and these observations suggest that they may use the LE available, transforming it into their voice energy (mechanical wave vibrations).

3.5. The Somayag

3.5.1. Introduction

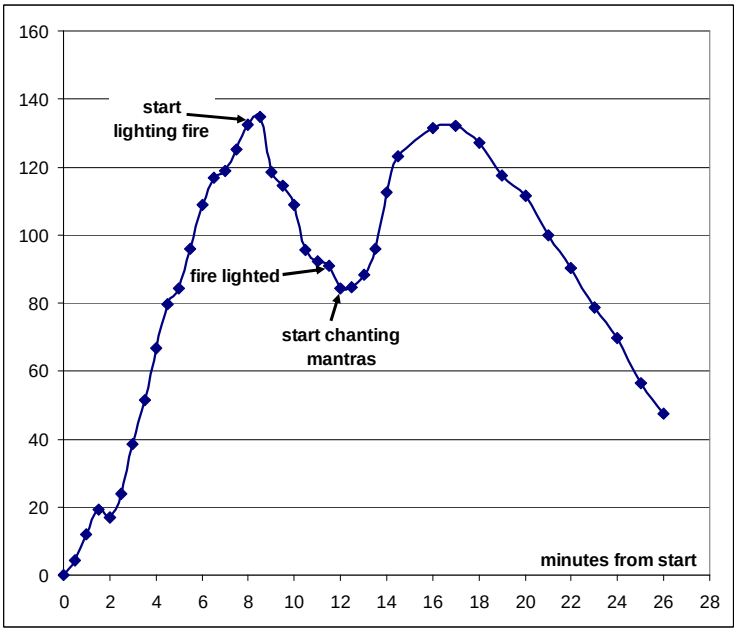
Somayag appeared to be a complex ceremony, performed during seven days, chosen according to appropriate planetary constellations. Except the first and the last day, there were both morning and afternoon ceremonies, each lasting several hours. Although for the Somayag a special site is provided, particular ceremonies are performed in various places within it, with special pits/hearths for fires or other prescribed arrangements. Therefore energy measurements with one meter placed in a fixed point at the side border of the inner ceremonial space cannot reflect all sources and patterns of energy change, when sometimes some different rituals were performed simultaneously. Also, as it is said that energy is driven vertically (even to a height of 12 km), it was not possible to register this flow. Only its side effects – the horizontal energy dispersion – were noted.

The whole ceremony was performed by a group of more than 20 pundits – priests trained in mantras, ritual fires, offerings and other elements of the whole ceremony, perfectly knowing their jobs and cooperating within their group without any sign – even for a while – of lost coordination. Also they are conscious to a great degree of energetic effects which arise from their work.

The name of the whole ceremony comes from *soma*, or *somawali* – fresh green stalks of *Ephedra*. There are many species of this genus growing in areas of dry climate in Asia, Africa, southern Europe and even in Americas. Some of them are known as medicinal plants, used by various traditional cultures, as well as in contemporary academic medicine. These plants contain alkaloids ephedrine and pseudoephedrine, considered the main active substances, effective as brain and heart stimulant, increasing blood pressure, respiration and overall metabolic rates. Due to its effects on physical performance *Ephedra* is forbidden as a drug in sports and in some countries also food supplements containing it are not allowed to sell due to slightly narcotic action and some adverse side effects encountered.

During the Somayag, *Ephedra* is particularly venerated. The stalks woven in a cloth have been conditioned in a special way by exposing them to energies of the ceremony for some days. Then they were ground in stone mortars with water to pour such a juice into wooden holders of various shapes and to use it for offerings to fire and also to drink during the culminant phase of the ceremony, apparently exhaustive for performers.

The main goal of such a large ceremony is said to be clearing and healing of atmosphere, water and soils with use of this special fire. People should be healed, although some effects of pain or temporary intensification of symptoms of illnesses which one already suffer, may occur (and did occur for some of people present there). It was also said that the spatial effects of Somayag may extend into a distance of more than 100 km, and sustain even for 80 years. These effects should be larger than 1000 Agnihotras performed simultaneously.



3.5.2. Day 1, December 22.

Fig. 12. The LE dynamics during introductory ritual in first day of Somayag.

Only short, half an hour ceremony was done this day afternoon at a side of the main ceremonial place (fig. 12). With mantras, the LE rapidly had grown during first minutes. Then pundits started to light fire by friction using a special wooden tool. This time resulted in pronounced decrease of LE readings, which then started to grow with fire already lighted and mantras chanted. Within some minutes LE returned to previous maximum to drop until the end of this ceremony.

3.5.3. Day 2, December 23.

In early morning (at sunrise) a small belt of clouds (*Altocumulus* and *Cirrostratus*) was visible in the sky, normally cloudless in this time of dry season. These clouds had disappeared till about 10 a.m.

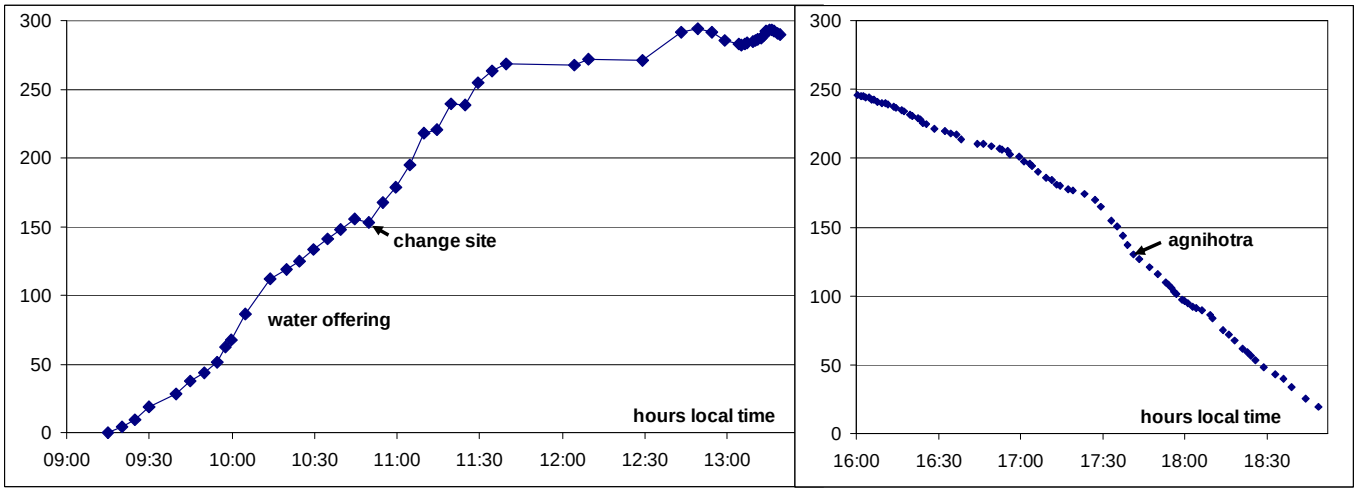


Fig.13. The dynamics of LE (corrected) at the Somayag place, Dec.23

Fig. 14. Clouds (Cirrocumulus) on afternoon sky of the second day of Somayag.

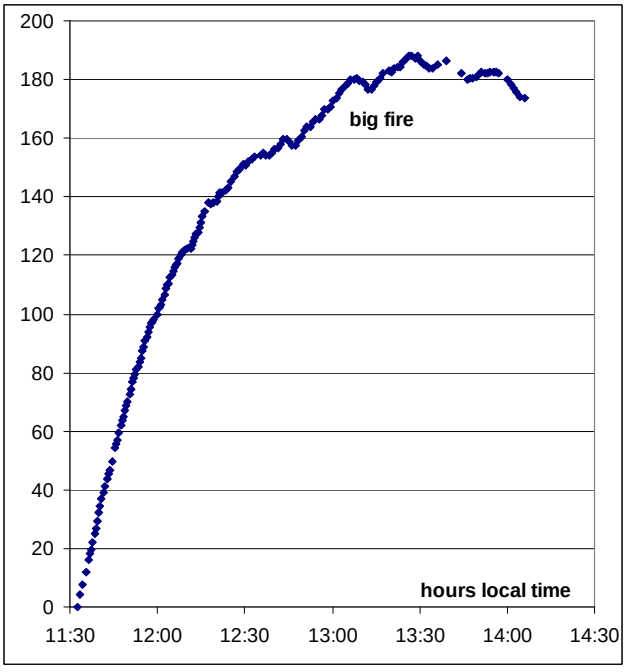
It was the day of offerings: fruits, flowers and water. Pundits started from previous side place then moved to the main ceremonial area. Morning offerings and mantras were connected to high growth of LE readings, with the highest rate during the offering of water. Change of sites, short breaks between rituals might result in small drops of LE level, rapidly returning to previous values and continuing in increase.

Completely different pattern was in afternoon ceremony. This, held in the main ceremonial area, was connected to a rapid decrease of LE values. In that time the sky became covered by clouds *Cirrocumulus*, which belong to the group of high clouds, forming by convection at heights between 6,000 and 13,000 m. These clouds had remained in sky till night.

The evening Agnihotra performed by many people at the Somayag site only very slightly slowed down the LE decrease, which was continuing through the whole afternoon.

Fig. 15. The ceremonial area during evening Agnihotra. Construction materials (bricks, paramagnetic earth, cow dung, bamboo scaffolding, mats), shapes and colours may have subtle energetic importance to be assessed in further studies. Also, fresh young banana leaves and marigold flowers hung on bamboo rods around the whole area may have more functions then merely decoration.

Before the Somayag I was informed that clouds may form as a result of this ceremony. Considering cloudless sky during the whole period of my stay there, the LE loss in this as well as in previous afternoon and cloud formation as energy consuming process, it is possible that these clouds might be the product of the ritual. Moreover, there was no wind (at least at the ground level), which might suggest that clouds were formed as a result of local air convection. However, there is no direct proof for this hypothesis. This phenomenon should be discussed with Indian meteorologists, who should have more data on air mass movements in this period and more knowledge on climate peculiarities of this region.



This day evening ceremony was ended with deep meditation of the leader priest (fig. 27), who sat on an antelope skin. The skin, according to rules of meditation practice, isolates the meditating person from the downward pull of certain earth currents (big LE decrease was noted during the whole afternoon) and helps raise *prana* to the 'third eye' chakra (pineal gland).

3.5.4. Day 3, December 24.

It seems that overall energy level, increased each day, was already so high that various rituals and events, which the whole ceremony consists of, did not produce such big and direct LE changes in the air of the ceremonial place, as previously were noted.

Fig.16. The dynamics of LE (corrected) during the third day of Somayag, Dec. 24. Note different LE scale.

This day production of "big fires" started. There were small fires of wood and ghee, with mantras chanted. A

small amount of mixture of cow and goat milk with ghee was added to the fire, with appropriate mantras chanted. This suddenly produced a large outburst of flame. In this moment measured LE in air started to decrease, which continued in few minutes.

It was important to have this milk from a freshly milked cow and goat which fed their babies.

3.5.5. Day 4, December 25.

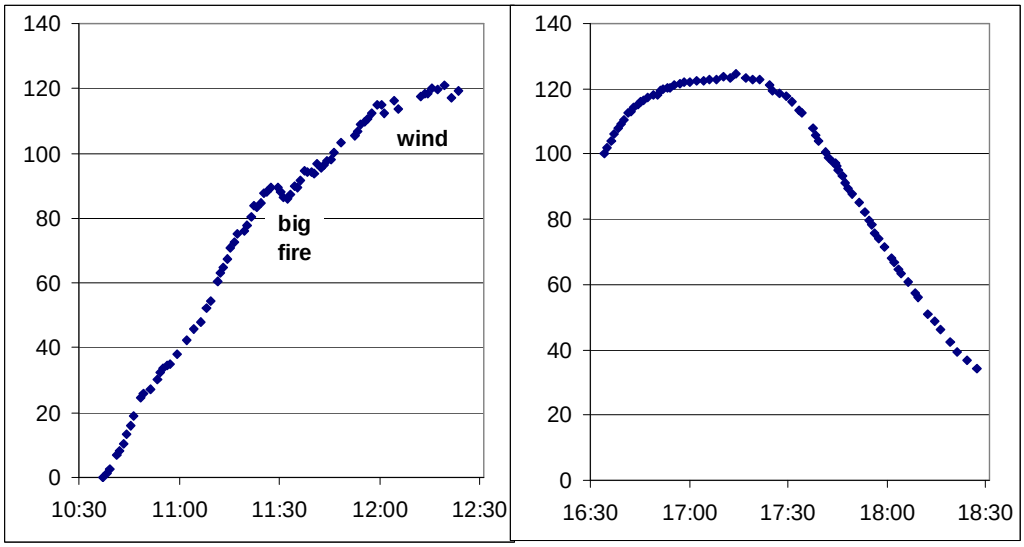


Fig.16. The dynamics of LE (corrected) during the fourth day of Somayag, Dec. 25.

Fig. 17. A "big fire" from cow and goat milk. Ephedra stalks and tools are "conditioned" in the atmosphere of such fires on wooden shelves in foreground.

This day "big fires" continued, becoming apparently bigger each next time.

LE dynamics became regular, with undetectable effects of particular events. Only one big fire, bigger than previous day, had produced measurable LE decrease in air at the border of ceremonial place.

Weak wind gusts, which appeared around noon, produced significant oscillations of measured results.

3.5.6. Day 5, December 26.

Fig. 18. The 'conditioned' Ephedra in a totally wooden 'vehicle', energetically protected with white fabric, in a bamboo-fenced compartment with banana leaves, marigold flowers and 'darbha' grass.

This day last 'big fire' was created and ceremonies previously with fires in pits in the centre of fenced ceremonial place, around noon moved to another centre in the same area – the big hearth, which was built of bricks and clay the previous day. Wooden shelves, where *Ephedra* was exposed were burnt as first.

The LE measurements reflect some small irregularities in the overall trend of energy growth in the area, which occurred at the same time as changes in rituals performed (fig. 19). Generally, breaks between rituals produce smaller growth of energy in air of the area.

But in early afternoon there was the only event, which at this phase of the ceremony had produced significant decrease of LE in air. This was erecting a pole in the ceremonial place, a new element within it (fig. 20 a, b, c).

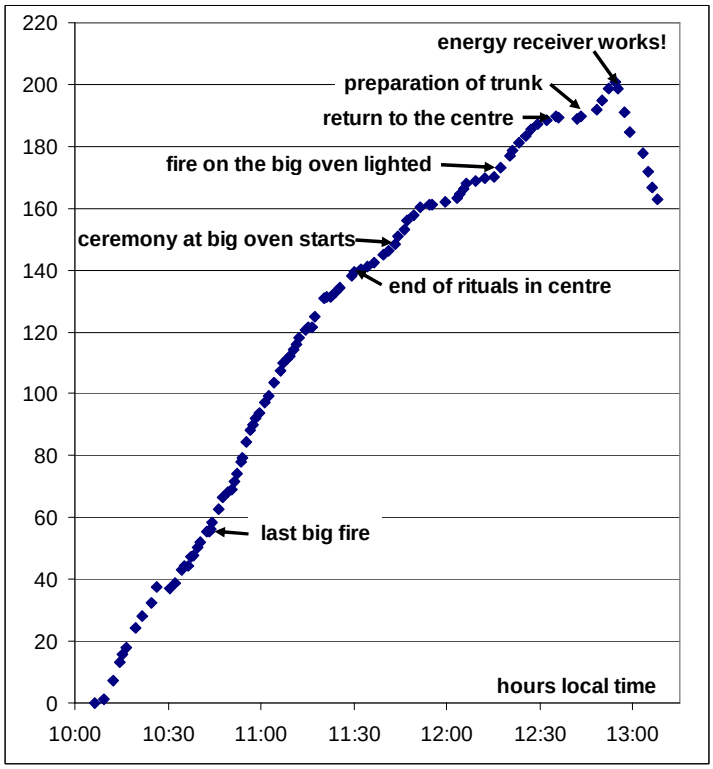


Fig.19. The dynamics of LE (corrected) during the fifth day of Somayag, Dec. 26.

Firstly, a fresh trunk of '*audumbara*' tree (*Ficus racemosa*; syn. *F. glomerata*) was placed vertically in soil inside the ceremonial area. It was then sprayed with ghee, covered with dry '*darbha*' grass and wrapped round with blue fabric. Then some sticks were added and when the whole construction was ready in few minutes, a huge LE drop occurred.

It seems that the whole construction worked as a powerful energy receiver and condenser.

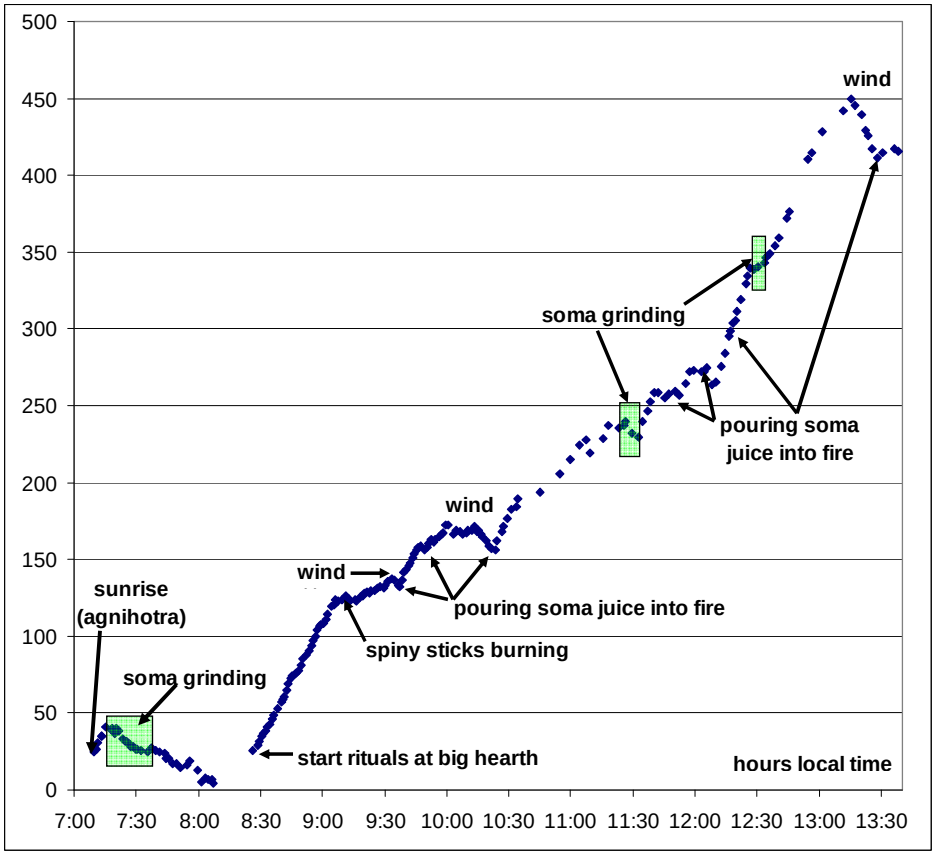
Trying to explain this, we should return to Schauberger's views on nature functions (Coats 2001). According to these, a tree trunk works as an electronic condenser, a device constructed to story energy loads. A condenser is built of thin layers of electric conductor and isolator, and the most common cylindrical condensers look like rings in timber of a tree.

Tree rings really are formed in this manner: during warm (or wet) season there is time for growth of broad timber vessels, filled with sap (an electrolyte, good electric conductor). Dark part of a ring, created during cold (or dry) season, is hard. There is no flow of sap in compacted lignin tissues, which cannot conduct electricity. The timber of *Ficus racemosa* used for this purpose had very distinct annual rings, qualifying the trunk as a good condenser. Freshness of the trunk is also of importance, as a fresh trunk still contains sap, acting here as electric conductor.

Fig. 20 a, b, c. Erecting energy condenser in the ceremonial place.

Another element of the construction is '*darbha*' grass, *Poa cynosuroides* (although some sources determine it as *Desmostachya bipinnata*). This grass, growing in tussocks at swampy sites, have long, very sharp leaves, sharply pointed at their ends. It is considered a holy plant in India, used in numerous rituals as purifying or protecting agent. Iyengar (www.trsiyengar.com/id65.shtml) writes that these leaves can absorb even 60% of X-ray radiation; therefore

it may serve as an effective absorber of various high-frequency energies from air. And probably here this is the main function of this grass. Specific shape and sharp edges of leaves may be responsible for these exceptional qualities, but according to this source, a special mantra is needed to chant when the grass is cut. Moreover, Iyengar suggests that the Earth's magnetic field may be a factor responsible for occurrence of this plant, as it was found also for some plant species in Europe in my ongoing studies.



The functions of other elements of this construction need more studies: the blue fabric (an energy filter?), and sticks attached to it which should work as antennas, receiving energy from air: the observed decrease of LE started only after these 'antennas' were attached. Also, the 'device' may collect energy from soil, as it was grounded in wet soil.

The ceremony continued also this day afternoon, but due to the excursion to the temples on the Narmada scheduled at that time, I did not participate in it.

3.5.7. Day 6, December 27.

Fig.21(left). The dynamics of LE (corrected) during morning ceremonies of the sixth day of Somayag, Dec. 27. Note different scales.

This was the most intensive day of the whole ceremony. Stems of *Ephedra*, which have been energetically conditioned during previous days, are now ground in a stone mortar with some water to make juice, which is then filtered and poured into wooden and ceramic containers of various shapes. This grinding of soma appears to be highly energy consuming (from air) process, as it is seen at fig. 21. The level of LE measured in air lowers during this procedure, or later in the day the rate of LE increase is retarded when soma was ground.

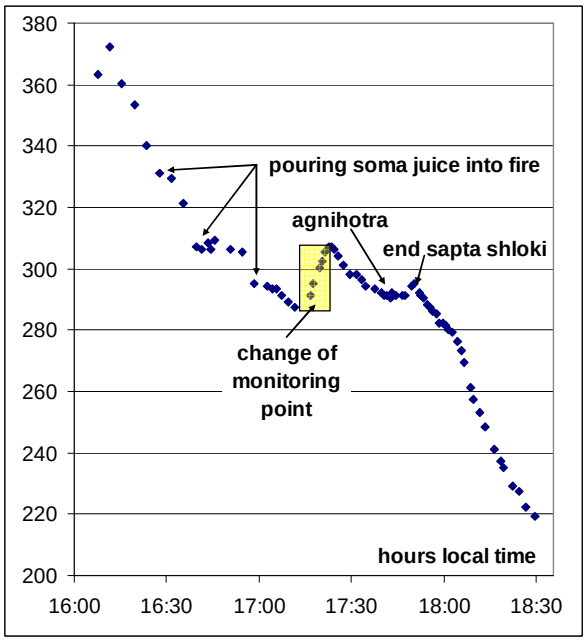


Fig.22 (above). The dynamics of LE (corrected) during afternoon ceremonies of the sixth day of Somayag, Dec. 27. Note different scales.

Fig. 23. Grinding soma in a stone mortar. See wooden containers for soma juice in foreground. Note a bundle of 'darbha' above them.

Contrary to this, pouring small portions of the soma juice to fire had produced increase of energy in surrounding air. The soma juice was poured many times during the day, individually or as a group ritual, always with appropriate (and loud) mantra chanted.

Fig. 24. Priests at the big hearth with soma juice in wooden containers, ready to pour it into the fire. Note their white robes with garlands of marigold flowers.

There were also sticks of a woody plant (its name wasn't noted) with large spines, used earlier in the ceremony, which were also burnt this day. The intense LE growth was diminished just in the moment of throwing them into fire.

The evening Agnihotra at the ceremonial place stopped the decrease trend of LE at this time, even with a growth of LE after it. This energy growth was stopped immediately with the end of S*apta Shloki* mantra, when the previous LE trend was restored.

Wind gusts, bringing air masses from outside, significantly changed LE readings in air surrounding the ceremonial site. Also, when the measuring device is moved closer to the point of ongoing ritual, the meter needs some minutes to fix to a new energy level. This also indicates strong energy gradients in the whole ceremonial area.

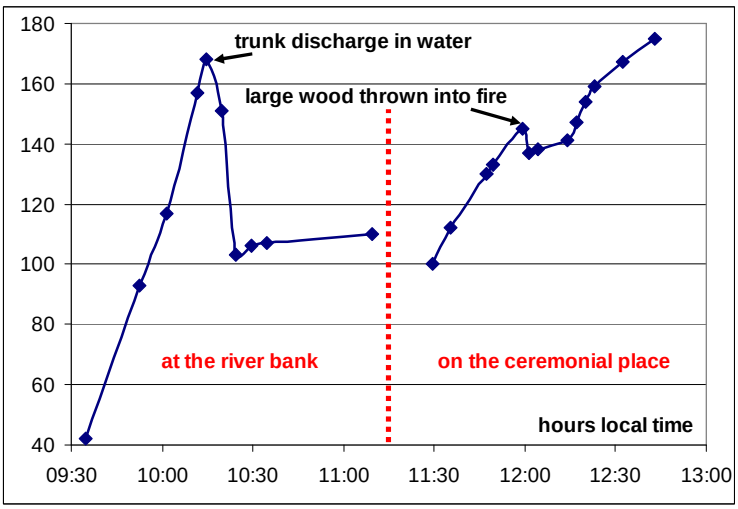
Although LE measurements were ended at 18:30, the ceremony continued after a break till late night. Apparently energy saturation within the area was so high at that time, that it was even possible to feel a strong "charge" or "current" in the ground with one's feet, and for some time it was even painful to stay at the ceremonial place without covering of head. And during this time a significant change of magnetic induction had occurred: the magnetometer readings decreased by 24 miligausses. This may be considered as a big change of the magnetic field.

3.5.8. Day 7, December 28.

Fig. 25. a) The condenser – tree trunk and wooden tools ready to release their energy to water of the Narmada; b) The trunk already in water: sparks of released energy, reflexes of sunlight or optical illusion?

The last day of the ceremony. The *F. racemosa* trunk, set as energy receiver and condenser two days ago, was unwrapped, drawn out from the ground and with only the '*darbha*' grass remaining on it, brought from the ceremonial place at the Narmada river bank. Wooden containers and tools previously used for handling soma juice were also brought to the riverside. After some time of chanting mantras when LE growth was noted, the trunk was taken into water. At that time, sudden and the most intensive LE decrease in surrounding air was noted, which lasted 10 minutes (fig. 26).

The wooden tools were also thrown to the river, where they flew down. People started to bathe in the river, apparently charged with some kind of energy. Then also cattle herds were brought to the river.



After this, a short ceremony was held at the ceremonial place, with last fires, offerings and mantras. The LE values had increased during this time, except a moment when a large piece of wood (a thick trunk) was thrown into fire on the big hearth.

Fig.26. The dynamics of LE (corrected) during final ceremonies in the seventh day of Somayag, Dec. 28.

Around noon the whole ceremony had finished with thanks to the really perfectionist Somayag team.

3.5.9. General remarks on the Somayag

The whole one-week ceremony seems to be extremely complex and complicated. Nevertheless, I would try here to put some order to its description, at least from the point of view of environmentally important energies involved. Of course, it is possible that many more different energies, "electricities", were in action, not possible to detect and quantify with instruments working there (or even with any other instrument of contemporary science). As for performing team, and many participating people, such a ceremony has mostly spiritual meaning and importance. There may be involved processes and actions far beyond the realms which contemporary academic science is interested in. But, while conscious of these, may try to approach them.

The measured LE patterns follow typical diurnal cycles, with growth from morning to around noon, and then decrease in afternoon, until sunset. Rituals performed during Somayag create – as related to the natural cycle – smaller irregularities, which however prove that these rituals have their effects.

To describe the energy evolution, five phases of the whole ceremony may be distinguished:

1. **Energetic cleansing of the site**. These are the rituals of the first and second days. Large amounts of energy are apparently lost, fire rituals are performed at smaller, side pits, there are many offerings of natural products. Main 'actors' perform rituals with their wives, which suggests the importance of balancing 'male' and 'female' energies. The phase ends with a deep meditation of the leader priest. In this time cloud formation was observed (charged clouds produced, if these really are the result of the ceremony).
2. **Charging the soma**. These are rituals of the third till morning of the fifth days. Fire rituals are performed at the main pits in the centre of the ceremonial place. The soma (*Ephedra* stalks) is exposed on a wooden shelf. There are several subsequent big fires, with apparently increasing energy loads, resulting from addition of some mixture of cow and goat milk with ghee. The energies at the site are so high, that the area demands special protection (bamboo fence, banana leaves, marigold flowers), and public is not allowed to stay close to it.
3. **Charging the trunk**. These are rituals from noon of the fifth day till the sixth night. A grounded energy condenser with energy receivers (specially prepared fresh tree trunk) is placed inside the ceremonial area. Main fire rituals are performed at big hearth at a side of the place. Previously charged soma is ground, still consuming more energy from air. Pouring the soma juice to fire produces new energy at higher level, charging air, soil and the receiving trunk.
4. **Charging the river**. These are morning rituals of the last day. The charged condenser (the trunk) is removed from the ceremonial place and brought to the river. Energy is released, conducted by electrolyte (river water, with relatively high concentration of dissolved salts in dry period) within the river channel and into groundwaters, contacting the river water via its hyporheic zone. Subsequently, groundwater may pass its energy loads to soils and deeper bedrock within the whole catchment area.
5. **Closing the ceremony**. These are short rituals around noon the last day. It seems that it is for closing and sealing what was open, and creating a new balance at a higher level. However, defining this phase is only a conceptual supposition, and more studies are needed on how this works.

There was not enough time to make detailed geomantic observations simultaneously; but roughly it could be noted that the Bovis/BSM values of the place had grown intensively. Starting from 30,500 BSM (causal range) on the second day (or even less before), there was increase through 47,500 on the third day (spiritual range) and 95,000 on the sixth day morning and 240,000 BSM at the end (both within the range of pure spiritual being).

The geomantic colours of the site were also changed: from blue to white, with indigo and green as supplementary colours at the end. Infrared appeared for a while as a transitional supplementary colour. Interpreting these colours according to L. Hilsberg, we start from order and regularity of structures (blue), to achieve proximity to the very spirit of the area, a space for creating unity, peace and also life (white). Indigo means appealing to the history, old times, even very ancient, of the site. It is also a colour of mind, of a place good for thoughts, for thinkers and scientists. Green means harmony, beauty and joy; is a colour of old people happy with their life and places good for them; it also combats pain. Infrared, detected only once in between, then disappearing, means dying, decomposition of something old and ill. When already dead, this colour also disappears.

When a biologist observes the whole ceremony and tries to understand as much as possible of it, his attention undoubtedly would be driven to special qualities of natural materials used in the ceremony. These are plants, as *Ephedra*, known as a metabolic drug, but it appears that its action is not only based on biochemical reactions of an alkaloid it contains, but it is able to absorb, to breathe in various energies from its environment. This involves a question, which is more general, not directly related to this ceremony: if we isolate from plants and purify substances which we think are the only active agent, do not we lose something even more important, but acting at another level? There might arise another question: what is the real purpose of milk? What babies of the cow and the goat really receive with it, if it may produce such huge fire outbursts? What roles and functions various plants may perform, used in the ceremony, both in practical use by humans, and in their natural environment? Whether interactions between plants in their natural communities really are based on chemical competition, or some other, more subtle energetic processes are involved, based on specific qualities of particular species, which we are not conscious of?

There are many more such questions, making a scientist's mind anxious, agitated and finally helpless. Even if this scientist had learnt so many times in his life that nothing is to be wondered at.

From this point of view it would be recommended for biologists to participate in such an event… or better not, to have a quiet and sure mind is so pleasant…

Fig. 27. The leader priest in deep meditation at the end of first phase of the Somayag (day 2).

Ending this personal digression, it is necessary to say that the priests of the Somayag team do have at least an important part of the knowledge which is lacking for an academically trained mind. They are conscious of energies present around and emerging here and there, of results produced by their work with "raw materials". Their kindness and help allowed me to see and understand much more and avoid mistakes. However, the problem sometimes is with translation and full understanding of thoughts, and it is not only because of different national languages we speak, but with translation between mystical, intuitive and logical ways of thinking. But, with learning of languages or with help of a good interpreter, this problem may be solved.

One important part of their knowledge is how people with their bodies and minds may react to huge energy loads and gradients produced during the ceremony. Defining spaces where 'plain' people are not allowed to enter and somewhat inconsequently observing these rules, was due to changing energy fields and more or less danger they may produce to people. Then, if it is so dangerous, how do they survive in the very heart of these fields? At least part of their mantras, their robes, breathing and mental work have their protective functions.

Chanted mantras were an inherent element in each ritual performed. It is another issue of paramount importance and only weakly known to contemporary science, how voice (i.e. mechanical wave) frequencies and energies affect processes at various levels, from sub-molecular to biological and psychical. These mechanical waves of interest are not only within ranges of audible sound, but also beyond these ranges, both in low and high frequencies. This should be an important part of further studies.

One more note on wheat grains (used in some rituals), which soaked in water at the ceremonial place, after the ceremony had germinated almost immediately. However it is not clear here how long these grains were wet before, but such studies on rates and intensities of biological processes, including seed germination, with control samples and strict experimental procedures, should be among the priorities for further studies.

3.5.10. Some inspiring intuitive quotes on Somayag

These quotes from Parvati's Orion Messages, www.oriontransmissions.com, may help us to think more…

> "*It would be interesting to measure the vibrations of songs. (…) This is the ancient tribe whose rituals include FIRE, WATER, and the purification and energizing of AIR. The healing aspects of all elements - EARTH, AIR, FIRE, WATER and ETHER, as purified via FIRE. Rays of Light are being emitted now from the SOMAYAG. These Light rays rise up and out from the pits of fire. SOUND is emitted. This is the seed to activate the SOUND CURRENT which will heal and seal the planet.*" (Dec. 23, 2007)
>
> "*Under the guidance and direction of the KALKI AVATAR, the effects are none to be measured by graphs and instruments alone. Graphs and instruments serve as a liaison between what Higher Knowledge reveals - that is 'revealed knowledge' - and the scientific realm of understanding. Collecting scientific data assists the mind in bridging the gap which the soul has already evolved far beyond. What is being created now can be likened to opening windows, a portal into what can only be explained as 'the next world'. Human technology cannot perceive of or calculate the existence of this realm of which we speak.*" (Dec. 24, 2007)
>
> "*The energies present at this sacred site have gone to a higher level. The power has increased to the degree that plants will be rejuvenated, water sources energized. We realize that scientific findings are what bear the most weight in the logical framework of the world in which you live. However, in ancient science, logic had its place alongside wisdom, Nature and Cosmic Awareness. The tribes of the Ancients' souls were imprinted with this knowledge. Now, all of the ancient wisdom imprinted in your souls is being rejuvenated, activated, reawakened.*" (Dec. 28, 2007)
>
> "*The energies released into the atmosphere are such powerful healing vibrations that the frequencies of this site are accelerated and the magnetic field enlivened.*" (Dec. 31, 2007)

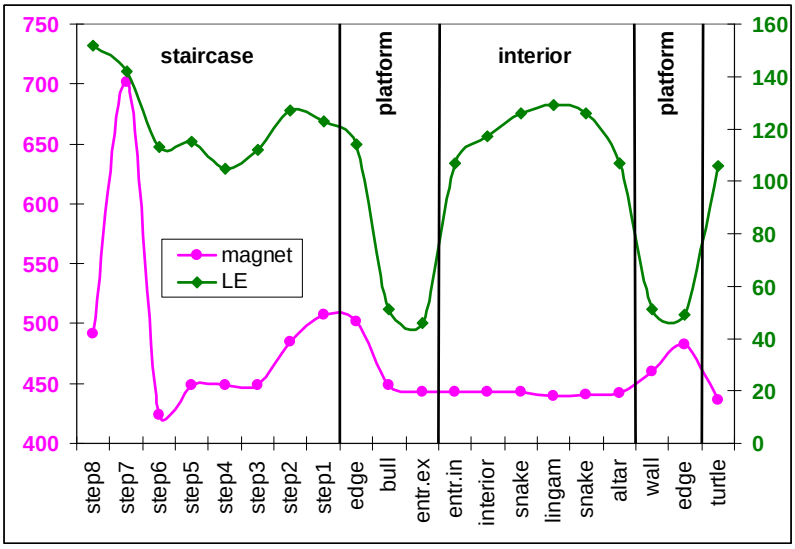
3.6. The Narmada river temples

Fig. 28. Two of Maheshwar's temples on the Narmada: at the bank (a, above left) and on the island (b, above right) with its interior (c, bottom left).

Two small temples on the Narmada river in Maheshwar were assessed with the geomagnetometer, to find if sites of their placement is somehow different when considering natural magnetic field of the area. However, even more peculiarities were found. In the temple at the river bank (fig. 28a), strong magnetic disturbances were found just in the area where a praying or meditating person takes his/ her place. Beside this, the magnetic field is regular, and inside niches, where a figure of a deity is present and where offerings are made, it was even perfectly uniform.

These peculiarities appear to be the result of materials used for construction of the floor of the temple. It was built of magnetic stones, cut and placed with their opposite poles close to each other. This results in big differences of magnetic induction just between stones. This may affect minds of people praying at the temple.

The island temple (fig. 28b) in local tradition is considered the centre of the Universe. Extremely high Bovis/BSM value (385,000) within the range of pure spiritual being was detected here. The main geomantic colour was indigo (colour of mind, intellect; old times with traces of the ancient past). Two supplementary colours were: white (peace, life; important site for the area - spirit of the region; empowering unity), and ultraviolet (usually a symbol of pain and wounds, but when associated with high energies – as here – it gives protection against evil of the highest, archetypical level).



Also, both geomagnetic and life energy measurements have shown interesting peculiarities (fig. 29).

Fig. 29. Magnetic induction and LE distribution patterns at the ground level within the main axial transect of the Narmada island temple, Dec. 30, 2007.

There is a very strong "magnetic gate" with strong positive magnetic gradient at one of lowest steps leading from the river to the temple. Also, both front and rear external edge zones of the temple platform are characterized by high values of magnetic induction. Contrary to this, very uniform magnetic conditions were found within the temple interior. Magnetic stones also were used for construction of this temple, as it was find in the previous one.

The pattern of LE distribution along the axial transect (measured around 11 a.m. local time) is even more peculiar. There are strong LE minima at both sides of the temple platform, despite free air circulation (although no strong wind) and full sunlight at the time of measurements. But in dark temple interior one might expect low LE values. However, there is a strong LE increase to level as outside the temple, with the maximum value at the central lingam. Also, a vertical LE beam was detected in air above the lingam. Therefore, LE seems to be 'absorbed', or 'sucked in' by the temple from its near surroundings, to transform it into an energy beam to be driven vertically inside.

These findings, although demanding more detailed measurements, show that constructors of temples were aware of natural magnetic fields both of the area and of materials used for construction, and used their knowledge intentionally. However, it still remains to explain what mental or physical effects on people entering temples were expected here. Also, the mechanisms and purpose of LE transformations remain unknown.

3.7. Personal energies

(chapter prepared in cooperation with Bożena Wujec)

3.7.1. Idea of study

Previous researches indicate that spiritual practises such as meditation (Lazar et al. 2000, 2005), prayer, yoga (www.apex.org), breathing techniques (Saatcioglu 2005) have strong positive influence of human's system.

Regular spiritual practice is reported to produce positive change in mental and physiological state. Having some previous experience in studying effects of meditation and conscious breathing patterns on human's mind and body, few weeks before ceremony we discussed to perform studies which could contribute to explanation of Somayag's effects on human well-being.

The idea of this study came from previous studies made by scientists from Harvard, MIT and Yale universities and the Massachusetts General Hospital, which compared a meditators' group with non-meditators using both advanced medical procedures and a very simple questionnaire to answer before and after a set of meditation sessions. Our idea was to organize similar simple study. Because time for preparation of study programme and tools was very short, there also was not possible to organize a control group, therefore we decided to do some preliminary observations having in mind the possibility to formulate further more advanced studies based on experience gained and results found.

3.7.2. Participants and the event

28 participants with extensive spiritual training were recruited from people who came for the event. They are long-performing Agnihotris, 15 of them with more than 15 years of strict practice in performing Agnihotra regularly. They came from 5 continents, different races, gender (13 female), ages (17-76) and life experiences. Most of them practice 5 aspects of the Fivefold Path: *Yajnya* (Agnihotra fire performing every morning and evening), *Daan* (giving and receiving with humility), *Tapa* (self-discipline), *Karma* (consequences of action and non-action), *Swadhyaya* (self-study). The moment for study – the Somayag – was very appealing: week-long retreat of intensive Somayag sessions twice a day, with collective Agnihotra performed at sunrises and sunsets followed by some meditation time.

According to Vedic science, we have known that yajnyas influence human minds and bodies (Paranjpe 1989) according to natural biorhythms. Also it was told that effects of this particular event can last even for 80 years. Thus we supposed to find more to better understand the importance of ancient knowledge.

3.7.3. Hypothesis

There was a concept to compare personal LE values of people participating in the Somayag before and after the ceremony to check if this highly energetic event can change energies of particular chakras. We expected that energy of chakras can increase or be more balanced as effects of the ceremony.

Along with chakra energy measurements we tried to assess psychological characteristics of the participants, which are believed to be connected to particular chakras. We were interested in finding how such intensive spiritual ceremony as the Somayag may influence people perceiving their various aspect of life. For this purpose a questionnaire, based on concepts and templates of Dr. Caroline Myss (www.myss.com), was designed and people were interviewed with it immediately after the measurement of their chakras before and after the whole event. To assess differences in perception we asked questions correlated with seven chakras (eg. feeling of security, emotions, self-control, relationships, self-power, spirituality). We expected that after the ceremony people can reach higher level of self-awareness and dissociation from everyday life problems.

3.7.4. Results and discussion

For various reasons, this attempt was unsuccessful, and for such future studies more preparation, a strict agenda and order of work are necessary. Moreover, the notebook, where most data of chakra measurements were noted, was apparently lost.

Tab.1. Summary of measurements of LE at levels of particular chakras for the whole population measured (mean, minimum and maximum values, and the standard deviation).

No.	Chakra name	mean	min	max	st. dev.
7	*Sahasrara*	13.7	10	19	2.6
6	*Ajna*	20.2	18	26	2.2
5	*Vishuddha*	21.8	18	30	2.3
4	*Anahata*	18.9	11	24	3.1
3	*Manipura*	20.8	17	37	3.9
2	*Swadhisthana*	19.7	12	30	3.4
1	*Muladhara*	15.9	11	21	3.3

Only data of measurements LE of chakras for 22 people have remained. For this preliminary analysis they were divided into three groups: women of European origin, men of European origin and Indian men, in between ca. 20 to 60 years old. The summary of results for the whole measured population is presented in table 1, and mean values with their standard deviations (explaining the variability within a group) for each group separately on fig. 30.

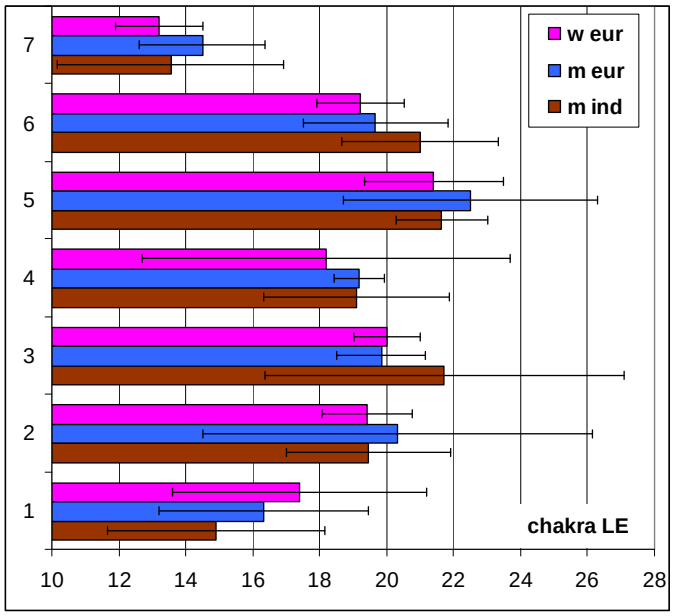


Fig. 30. LE of particular chakras of assessed people (mean values with standard deviation), separately for European (Caucasian) women, European (Caucasian) men and Indian men.

Mostly due to small population assessed, there were found no significant differences between analysed groups. However, some trends are visible on the graph and further studies should be done with larger groups of people assessed to confirm (or reject) their validity.

It is interesting to note that the highest variability of results within a group was found for the second (sexual) chakra among European men, third (ego consciousness) chakra among Indian men, and fourth (higher emotions) chakra among European women.

According to the chakra theory, balancing energies of all chakras leads to good health and performance of a person. In this respect, the majority of priests of the Somayag group which were measured (unfortunately, the numerical results were lost) had nearly the same LE values found at levels of their chakras, sometimes with slightly lower values for their bottom (first and second) chakras. Moreover, at least their leader seems to be conscious of these energies: when asked for permission of taking measurements, he designated as the first to be measured a priest with all perfectly balanced, high energy chakras.

Also some (but not all) people known as engaged regularly in spiritual practice within the Fivefold Path had well balanced chakras, including the seventh (crown) one, usually much weaker among the whole population.

Fig. 31. Mr. Hari Apte, the leader priest of the Somayag ceremonial team, uses his mental power effectively to change LE readings by the LE meter.

For a person taking measurements it is even not necessary to know in details where, according to Eastern traditional sciences, particular chakras are located along the body main axis. These places are detected with the probe of measuring device, i.e. a chakra is the point where local LE maximum value is found.

Young priests of the Somayag team were fascinated with a finding that their aura energy affects the LE meter readings when they approach the device – the closer their bodies the higher values were read. But their leader was able to do much more: from a fixed distance, without any movement of his body, he radiated his mental energy sufficiently strong to move the pointer even beyond the scale. From my previous observations, only few best energetic healers were able to move the pointer in such a way, but the difference produced was even less than in this case.

Although for Western people this questionnaire worked well, it appeared to be totally useless in case of almost all Indian people (6). We didn't take under consideration many cultural differences, such as family issues or approach to spiritual development. Some of Indian participants estimated as "rather good" family relations which in Europe or USA could be understood as pathological (relation between aged father and son).

We also find out the differences in understanding of *Swadhyaya* concept - the fifth commandment of the Fivefold Path, which is self study, including meditation. It was very characteristic the opinion of one interviewed Indian person, who told us that he regularly practiced Agnihotra (as the first aspect), but other aspects of the Path, especially the fifth one is the most difficult and therefore practicing it might be available only to people who already are on an elevated level of their spiritual development.

But on the basis of these observations it is still difficult to say whether this level of self-consciousness among the Indian population is substituted with more intuitive approach to one's own emotions and relations to others, which would work in practice equally well, or the design of questions in the questionnaire should consider some important cultural differences to a larger extent to make it more relevant.

3.7.5. Conclusions and surprise

One important issue we didn't know was how people with their bodies and minds may react to huge energy loads and gradients produced during the ceremony. With our scarce knowledge what exactly Somayag is, we expected immediate positive changes: that after the ceremony people can reach higher level of self-awareness and dissociation from everyday life problems, that they can have better general physical and mental state and come back home with "charged batteries" as it was observed in other studies.

During the whole process of Somayag we observed increase of physiological participant's reaction on huge energy produced by ceremony. Some of these reaction were connected with the activation of people's chronic affliction, some of them had the classic symptoms of food poisoning, symptoms of cold, infections. For few people the reaction was strong on emotional level or as they reported later - even life-changing.

With a little more understanding of what Somayag can be now and how huge and last longing impact can has for participants we suggest to repeat the study with multicultural approach and in longer time perspective.

4. Tapovan

4.1. The environment

Tapovan is a 15-acre (ca. 6 ha) *Homa* farm, serving also as a Vedic health retreat and training centre, located between cities of Dhule and Jalgaon in northern Maharashtra (20º56'N, 75º06'E), managed by Ms. Anne Godfrey and Mr. Bruce Johnson. Their internet address is www.tapovan.net.

This farm was established about ten years ago and is fully organic, with Agnihotra and other *yajnyas* performed regularly. Since 2001 permanent 24 hours-a-day *Om Tryambakam* fire ritual has been performed there.

Fig. 32. Hills near Tapovan farm.

The whole area landscape is flat lowland, 227 m a.s.l., with only a small chain of low (17-30 m) hills about 1 km from the farm centre. Beyond these hills there is a dam reservoir with some side ponds, isolated at least during dry season and partially overgrown with *Chara* sp. and *Marsilia quadrifolia* as main macrophyte species. Rocks are of volcanic origin, soil is also paramagnetic, but much less than found in Maheshwar. Natural vegetation is of dry savanna/semidesert type, and dry monsoon-type agriculture is common in the area.

The Tapovan farm looks like a lush green oasis among surrounding dry vegetation. This appearance seems to result from Vedic management methods, as early pictures of the area show the same patterns as elsewhere around. Also, the managers informed about many climatic and biological peculiarities, as rains present only there, early maturation of fruit trees, no need of cotton pest control (essential in conventional farms in the area), large numbers of birds assembling there during catastrophic droughts, and more. Fruits grown there really have an extraordinary taste.

Fig. 33. A Tapovan pond in early post-monsoon season. Note good water transparency. Photo B. Johnson.

Fig. 34. Wet soil in a drying Tapovan pond become overgrown by ephemeric vegetation.

There is a small spot within the farm area, overgrown with natural, unmanaged vegetation, where people do not enter inside. This is kept untouched as a place where 'spirits of nature' live. For future studies it might serve as a good vegetation monitoring site with observations made from outside.

To improve water balance of the farm, four ponds for monsoon water storage had been built there recently. These ponds, one of them down to 2 metres deep when full, store water even until January and contribute to groundwater recharging with more water available in wells when ponds eventually dry out. Water in ponds is clear, with some algae and plants present. Numerous species of amphibian occur and reproduce there, with the largest Indian frog species, *Hoplobatrachus tigerinus* seen during my visit there.

Numerous species of algae, mostly diatoms (main genera: *Navicula, Nitzschia, Achnanthes*) and benthic cyanobacteria (including nitrogen-fixers) dominate communities in samples taken from remaining water and wet soil of Tapovan ponds. In samples taken from ponds beyond the hill chain there are many more green algal species and euglenophytes, main cyanobacterial genera are *Oscillatoria* and *Merismopedia*, and diatoms are less abundant with *Synedra* as the most common genus.

Geomantic assessment of the area indicated the highest Bovis/BSM energy level (33,700) at a large stone lingam placed in the garden, with indigo as the main geomantic colour and blue and orange as supplementary ones. The second largest value (32,000) was found in the Agnihotra hut (where *Tryambakam* fires are also permanently done) with respective colours white, green and orange. The average level for the whole farm is about 31,000 (white – indigo – green) and this value does not change significantly within the radius of about 700 m, as measured along both directions of the main local road. After this distance Bovis/BSM values start to decrease with a rate about 300 units per 100 m. However, this gradual change was found only within a flat ground surface area. Even small hills create an impermeable barrier, where just on other side the measured values from the causal range had dropped abruptly to 13,400 within the etheric range, with change of colours to blue with black and green.

For interpretation of these colours their significance is described below:

White: colour of peace, life; important site for the area (spirit of the region); empowering unity.

Indigo: appealing to the history, old times, even very ancient, of the site. It is also a colour of mind, of a place good for thoughts and thinking people. Indigo with green - crossing of ley lines.

Blue: order; secrets of deep water; radiation of regular structures.

Green: nice, harmonious area, beauty and joy; mitigation of pain; typical for old, but well living people.

Orange: easiness, entering zones; underground rock ranges; life as procreation; easy communication and culture.

Orange with indigo (as at the big lingam) which was found also in some European megalithic sites, may denote an excellent place for meetings and consultations, as for a person it means a mind with easy formulation of thoughts.

Black: sadness, madness, pollution of spirit; may be connected to sites of catastrophes, big fatal accidents, crime; but may also protect from evil of humans.

Geomagnetic measurements revealed relatively low values (430-450 mGauss) of strongest magnetic induction vector within the garden area, with a slightly lower (427 mGauss) value at the meditation place in the main house. But for nearby (ca. 2 km) Shivadham marble (i.e. diamagnetic) temple, built recently (1988-93) and for surrounding area, even much lower values (395-415) were found, with minimum at Shree Gajanan Maharaj's altar. Some evidence of possible magnetic vortex in this area was found, but not studied in details yet.

Shree Gajanan Maharaj (1918-1987) was a great spiritual master and teacher (*Parama Sadguru*), who resuscitated the ancient practical Vedic knowledge, reintroducing Agnihotra and other Vedic practices to be performed widely, along with innovative social approaches. In 1969 his scholars performed first contemporary Somayag ceremony in full accordance to ancient Vedic rules. He considered the site where now Shivadham temple is an exceptional place of ancient spiritual practices and great future, and it is believed that this temple was built according to his messages. Nowadays his line of teachings is continued by Shree Vasant Paranjpe with growing numbers of followers worldwide.

4.2. Agnihotra and LE diurnal dynamics

"*...this simple fire is far more powerful than can even be recorded. In subtle realm, it has the power to shift frequencies and bring in higher energies, drawn to the Light*" (from Parvati's Orion Messages, Jan.12, 2008).

Fig. 35. Waning Agnihotra flames in Tapovan: a shift in light wavelengths (frequencies) of flame towards higher light energies, from yellow through green to blue and violet is notable when Agnihotra comes to its end there.

Agnihotra in Tapovan is performed in a special round open-work hut with more than 20 individual fire places arranged at its inner perimeter. The hut stands inside a garden full of green plants and trees. Permanent *Tryambakam* mantra with offerings,

done by one person at a time changing according to a roster, stops for the sunrise and sunset times, when Agnihotra is performed by at least several people, i.e. staff, farm workers and guests.

When Agnihotra is done there, change of flame colours is very characteristic (fig. 35). Typical yellow flames of full fire towards the end of ritual change into green, then blue and even violet rays are present when fire is going to cease. At a first sight green flames seem result from copper pyramid used for the fire, as copper compounds give flame this characteristic colour. But further changes of flame wavelengths towards shorter ones, bearing much more energy, need another explanation. As in other Agnihotra sites I did not see such a frequency shift, or it was much less pronounced; it seems that high energies of the site (with permanent *Tryambakam*) stimulate such development of electromagnetic patterns. This high flame energy may in turn initiate more complex photochemical reactions of primary combustion products and affect the final composition of volatile substances emitted, as well as the Agnihotra ash produced there. These possibly may appear to be more powerful when influencing biological processes. To verify this hypothesis, more future comparative studies with biological material will be needed.

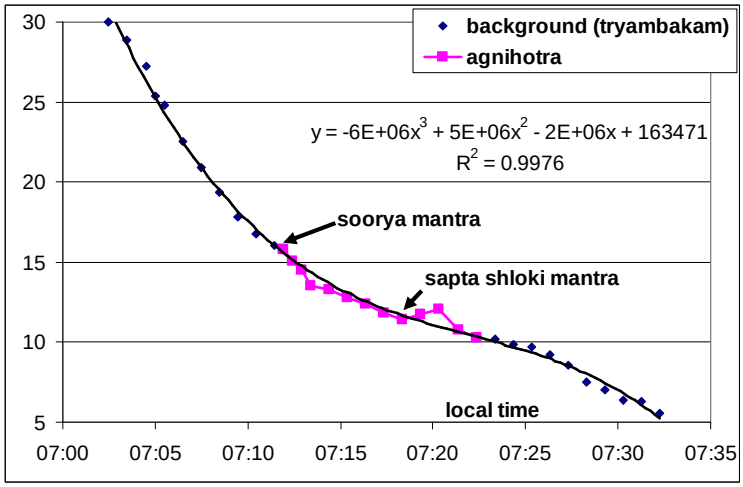
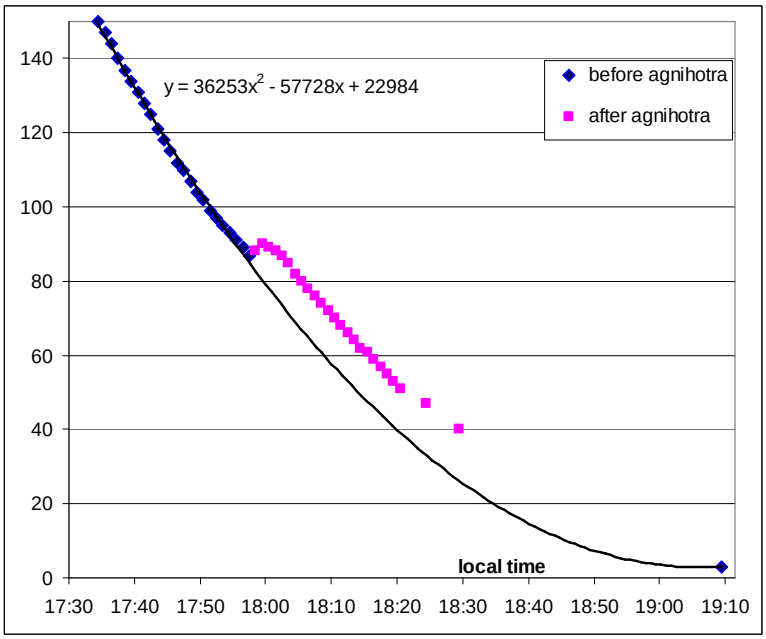


Fig. 36. LE pattern during a morning Agnihotra in Tapovan, Jan. 3, 2008, measured inside the Agnihotra hut, against the best-fit polynomial model of background LE changes around sunrise time.

With such high energies of flame, one might expect there even much more intensive LE changes in air during Agnihotra then those measured in Maheshwar. But when LE pattern was measured during morning Agnihotra inside the hut, the observed differences of the background energy change model (which is the result of natural diurnal dynamics of LE level in air) which might be created by Agnihotra fire, are surprisingly low (fig. 36). After Agnihotra mantra a very small decrease of LE was noted, which continued till *Sapta Shloki* mantra, during which LE level slightly grows. Then it rapidly returns to the background pattern of diurnal change.

It may be only speculated now what factors and mechanisms are responsible for these only minute changes in measured levels of life energy there, which might be attributed to Agnihotra. First hypothesis is that the environment is so saturated there with energies released in intensive practices, that any new portion may be only relatively weak in comparison to the total amount of energy present. It may be even supported with observations at the Somayag place, where the same rituals performed later, even if by appearance seemed to be more intensive than previous ones, resulted in smaller changes in energy patterns due to increased background level.

Another possible mechanism may arise from dynamic patterns of LE transport and transformation. Open-work construction of the Agnihotra hut allows easy diffusion of air particles charged with LE. Moreover, large biomass of live and intensively growing plants in the garden surrounding the hut may be responsible for interception of energy produced in Agnihotra there.

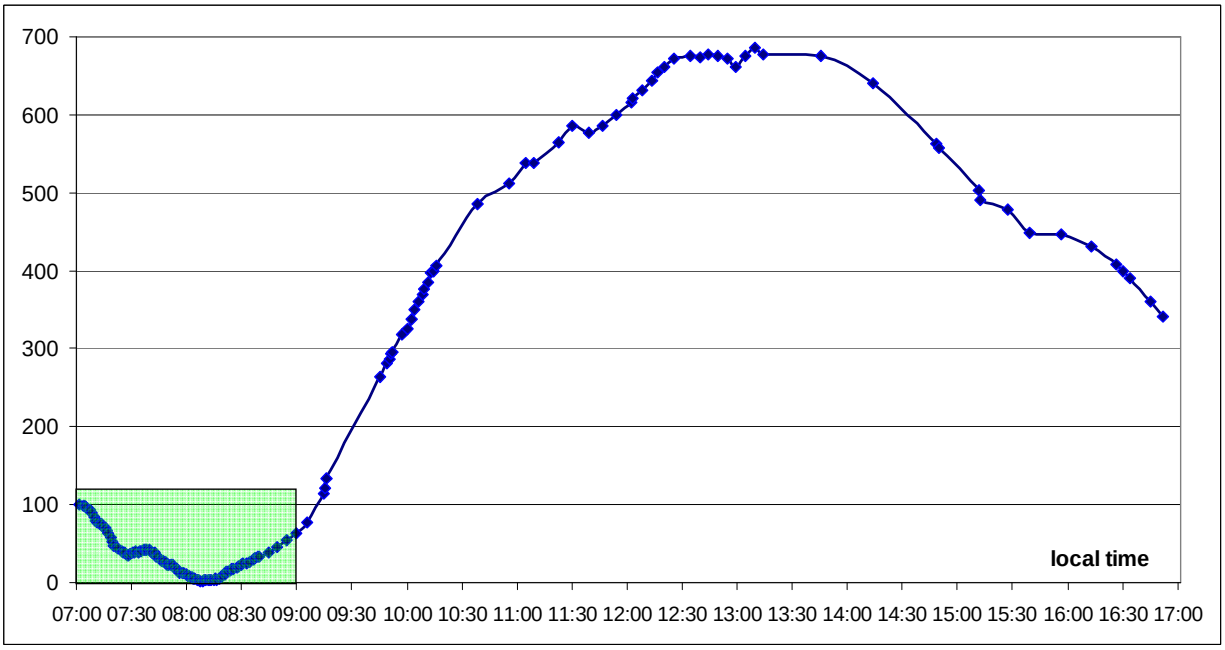


The last possibility is more effective binding of LE into ash produced in Agnihotra there. To verify this hypothesis it would be necessary to compare biological effects produced by Tapovan ash with Agnihotra ashes obtained elsewhere.

Fig.37. Dynamics of LE around sunset Jan.5, 2008 in Tapovan, measured in a point ca. 120 m distant from Agnihotra hut. A clear sustaining energy shift appears when Agnihotra mantra is chanted.

Considering the energy saturation hypothesis, possible multiple interactions with vegetation and a large area of elevated geomantic scores around the whole farm (see page 24), next LE measurements were done within a distance about 120 m from Agnihotra hut, in a fixed point on roof

terrace of the main house. When evening measurements were done, a regular LE drop was observed towards sunset time (fig. 37). It is consistent with observations from elsewhere, indicating high correlation of measured LE with solar light intensity. This dynamic pattern fitted very well to a second-order polynomial function. But precisely in moment of sunset, when Agnihotra was performed in the hut, a significant LE rise was noted, and after few minutes the LE drop started to continue, but on a higher level parallel to the modelled function. This indicates that during sunset a big surplus of LE was introduced into air, and that probably it is due to Agnihotra performed at this time.



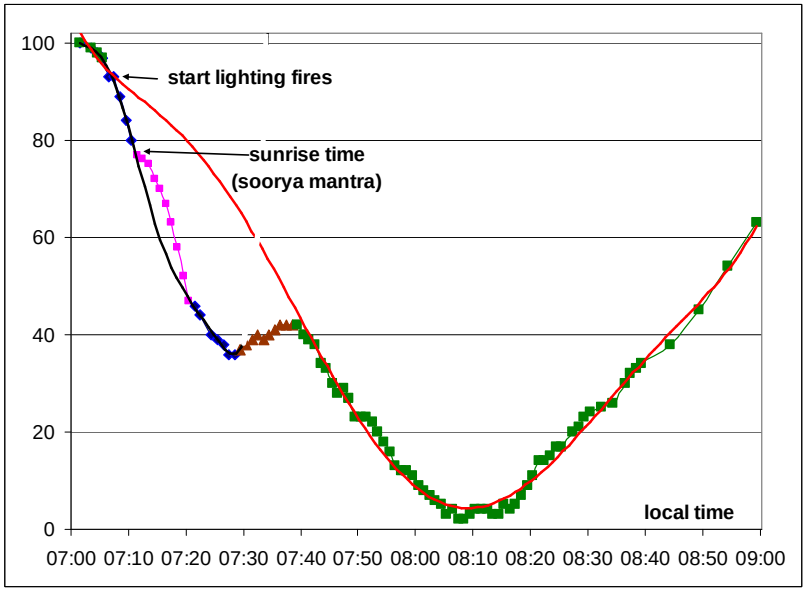


Fig. 38 (above). The light phase of background LE diurnal cycle measured 6 Jan. 2008 in Tapovan on the main house's roof terrace. For details from between 7:00 and 9:00 am (green box) see fig. 39.

Fig. 39. Details from fig. 38: Morning changes of background LE measured 6 Jan. 2008 in Tapovan with a graph of best-fit polynomial function describing LE dynamics (red line) and deviations resulted presumably from Agnihotra.

These measurements have been continued during almost whole next day, starting from before sunrise (fig. 38). The diurnal amplitude appeared to be very high there, with maximum – as it was expected – around noon, i.e. during two early afternoon hours. But during whole one hour after sunrise LE amounts had not increased with increasing light intensities, but were dropping even below typical low night ranges. Moreover, this drop was not monotonous, not following one simple mathematical model, but its complex course may be interpreted as resulting from morning Agnihotra (fig. 39).

Just from the time of lighting Agnihotra fires even more steep decrease of LE than expected from the general morning polynomial function was noted. According to these empirical data, a new trend was calculated. This model was then interrupted strictly at the sunrise time, when Agnihotra mantra and offering was done. After 9 minutes the LE pattern returned to the secondary model, and after next 8 minutes the first, 11-minute increase of LE values was started, which in result returned the LE dynamics to the primary model with continuing decrease until one hour after sunrise. From this time LE constantly grew until noon.

With accordance to the energy conservation principle, the integral of difference between the primary and secondary morning models (the area between red and black lines on the graph) should be transformed into another form of energy. The overall LE drop after sunrise should probably be attributed to its interception by plants, starting their photosynthesis at that time with increasing available light energy. Then, this surplus LE may be used for

enhancement of this process, and this may explain why there is such intensive plant production, which resulted in the creation of such a green oasis in surrounding semi-desert landscape. Moreover, apparently higher than expected evening LE values may support the dark photosynthesis phase, when organic compounds are produced by plants.

This hypothesis, however, needs more direct confirmation in future ecophysiological studies done there, explaining not only courses of physiological processes, but also the role of LE for their performance. It seems that LE is necessary (and is consumed) for initiating photosynthesis, and when this process attain its full intensity, then LE is released; this may also be consistent with chlorophyll fluorescence patterns. The same is probably true with water uptake by plants: to start this process LE is consumed (see chapter 3.4.), and when plants already have sufficient and balanced water availability, then LE may be released (see chapter 4.4.). Also other biotic processes may be stimulated by increasing LE availability, as songs of birds (figs. 9 and 11).

4.3. The *Rudra*

Rudra is a complex and long (about 2.5 hours) ritual, which in Tapovan is occasionally performed in the meditation area in the main house. Dry cow dung balls are burnt in one standard copper pyramid, with multiple ghee offerings to the fire and a complex mantra dynamically chanted. The whole ritual consists of ten parts, with one ball burnt during each one, and the same mantra recited, ended with a final mantra. Between parts are short breaks, which appeared to be irregular, from less than one minute to 3 minutes long.

Five people participated in the ritual and LE changes have been measured during the whole ritual time in air of the meditation area. The results presented (fig. 40) are corrected against natural LE diurnal dynamics, calculated for the respective time of day.

The pattern of LE change appears to be also complex, as the whole ritual is. The increase of LE level is the main general trend of the whole ritual, and LE decrease occurs after end of the whole ritual. But each of ten parts starts from LE decrease, followed then by next step of growth. This initial decrease resembles the same pattern in LE natural diurnal cycle with LE absorption/release phases, or during the first phase of the Somayag. And as there was, each next *Rudra* decrease phase is, as a rule, less pronounced that the previous one, probably also due to energy saturation which increased its level. Breaks between *Rudra* parts did not produce LE decrease. It was even a time of continuing LE growth.

However, some irregularities occurred in the whole LE dynamics. The deepest LE drop was noted when the person who chanted the mantra, normally with very clear and dynamic voice, for a moment only couldn't continue chanting in a phase of LE growth. This short voice suspension produced the major LE decrease during the whole ritual.

This observation contributes to the explanation why performance of the Somayag needed to be so perfect. It appears that even short voice suspension when chanting mantras may produce unexpected big energy changes.

Other, but smaller LE decrease was noted when a cat entered the meditation area. This also explains why during Somayag, especially in its initial, not yet LE-saturated phases, people were not allowed to enter even at some distance to the ceremonial area: this might produce unexpected LE changes in the ritual field, even much larger than these produced by a small animal.

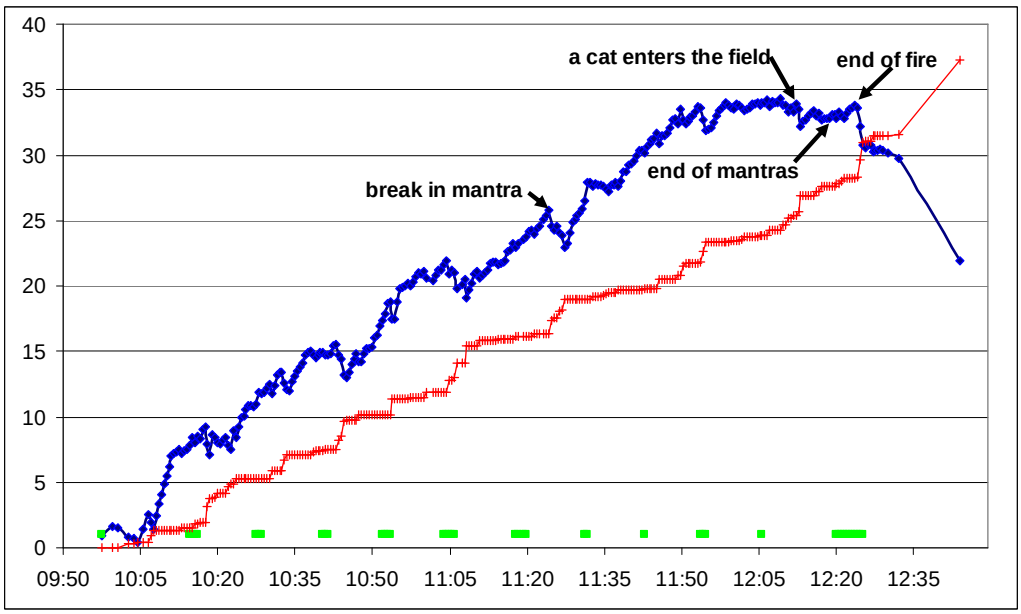


Fig. 40. The LE dynamics (corrected) during the Rudra ritual in Tapovan, Jan. 4, 2008. Blue points and line are LE measured values, red line is the balance between LE produced and its actual amount, and green bars indicate time of breaks between the Rudra parts.

From the other side, it is possible that LE measurements during a ritual may be useful for control of its correct performance. When compared to typical patterns, such measurements may assess if a mantra is pronounced sufficiently well, or how long breaks between parts may be kept to not produce LE drops at that time, or whether any factor which might disturb a ritual is not affecting its environment.

After this ritual the Bovis/BSM readings had grown from 31,600 to 39,000. It may be also interesting to note the observer's subjective impression that during this ritual it was particularly difficult to keep attention focused on measurements and not to give up to the rhythm of this event. Probably high LE oscillations might affect mental concentration ability.

4.4. LE of banana fields

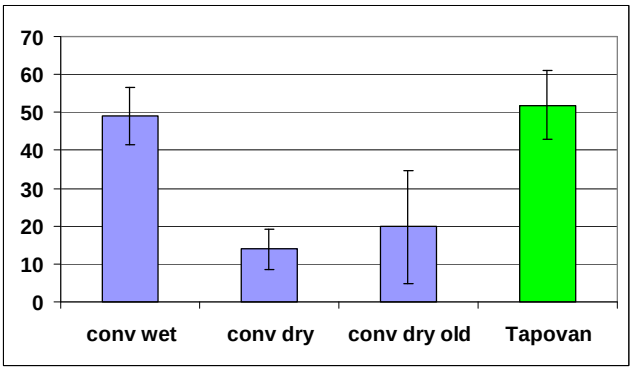


Fig. 41. Mean surplus LE values at banana fields in Tapovan (organic, Homa) and in a neighbouring village (conventional), with bars indicating standard deviation. Three conventional fields were measured: wet (watered), dry and an old field where fruits have been collected already.

LE measurements were done around noon on some banana fields. There were twenty random points on each of the field where measurements were done, with the meter calibrated against background LE level outside fields. Mean values and standard deviations were calculated from data taken from each field separately.

Three conventional fields from the same farm were measured: two of the same age and developmental stage of plants, i.e. one watered previous day, another with dry soil (to be watered soon), and an old field with fruits already collected, dry soil and dying banana plants. Some weeds started to develop locally on the last field.

Big differences in LE level were found between the wet and dry fields, with much higher values on the wet field. However, when recalling the previous description of meditations in Maheshwar (chapter 3.4.) it might be confusing here that watering of plants there had caused immediate decrease of LE values. In fact, reaction of plants to watering is similar to their reaction to daylight appearing after sunrise (chapter 4.2.): drop of LE for a relatively short time and then increase of LE in surrounding air. It might be supposed that plants consume available LE for switching on physiological processes, demanding external supply of light energy or substances as water or nutrients. Then these physiological processes may be responsible for production of excess LE, which release is proportional to intensities of these processes. That is why spots with intensive plant primary production are characterised by high LE values.

To verify this hypothesis, some experiments with simultaneous LE measurements, plant enzyme kinetic studies and chlorophyll fluorescence measurements will be necessary.

The old field was characterised by the largest spatial variability of LE values. This was due to variable insolation, different condition of banana plants with some of them dying, and other plants developing in some random spots.

The organic Homa banana field in Tapovan, with moderately wet soil, had the same level of LE as the wet conventional field did. Some sources claim that crops of organic agriculture should have higher LE values than conventional ones. This might be true even here, considering that LE background level in Tapovan (the garden with other growing plants) was higher than around the other fields (dry fields of post-monsoon crops already collected), and hence the LE difference between the banana field and surrounding areas was lower. Also bananas in Tapovan were younger and smaller than those on the other farm, and therefore their biomass was lower, as probably overall gross photosynthesis also was.

5. Pune

5.1. Meetings

Some of scientists met in Pune appear to be excellent resource people. With their knowledge and experience it would be highly recommended to interest them into further cooperation in any joint projects or consulting of more detailed and comprehensive future studies, which would be based on findings of this report or containing concepts emerging from it. Among such people there are:

Dr. Hemant V. Ghate. Professor and Head, Department of Zoology, Modern College of Arts, Science and Commerce in Pune. For over 30 years he has carried out studies on taxonomy, distribution and ecology of various groups of fauna of the region. He specialised in studies of fish, then amphibians, and recently in some groups of insects. Excellent teacher, who educated many past and recent students, continuing work in various branches of zoology and contributing to knowledge of biodiversity of the region. Has been engaged in international research projects, among others with Polish entomology team of Wrocław University.

Dr. Anand D. Padhye. Reader in Department of Zoology, Abasaheb Garware College in Pune. A specialist in amphibian research, interested mainly in fields of frog embryology, toxicology and teratology (with studies on effects of herbicides and pesticides on amphibians), molecular phylogeny, as well as in more general issues of ecological restoration and biodiversity assessment studies. Western Ghats are the main region of his recent field studies. Member of Declining Amphibian Population Task Force (DAPTF), a branch of IUCN.

Dr. K. N. Dhumal. Professor in Department of Botany, University of Pune. Conducts studies on various aspects of plant physiology and ecophysiology with regard to cultivated and medicinal plant species, also on soil physiology, including studies on soil enzyme functions and kinetics, as well as on aspects of phytoremediation. Already engaged with his students in research on biological effects of Homa farming and seeking possibilities to intensify these studies, with experience in areas of physiology of key importance to explaining biological effects of Agnihotra.

Dr. Sujata Vaidya, trained in Ayurvedic medicine, leads the Supra Research Foundation. She conducts research, training and treatment in various fields of alternative and integrative medicine, including aura scanning, interpretation and balancing, human energy field studies, ayurvedic heart attack rehabilitation. High levels of Bovis/BSM energy, from 31,000 up to 40,000 in the meditation place, occur in her clinic as a result of healing practices there. See also chapter 6.2. for information on some tools used there.

Dr. Narayan R. Desai is Executive Council Member and Principal Investigator in Tribal Mensa Nurturing Program / Gifted Child Program of MENSA India. Educated both as academic and Vedic scientist, seeks bridges between both approaches and uses them extensively in children's education projects, where children have opportunity to develop and appreciate traditional knowledge of their own tribes and apply it in practice. Interested mostly in bridging Vedic and academic issues of peoples' relationship to nature and environmental/nature management and conservation.

5.2. Agnihotra in Baneshwar

When visiting a small Agnihotra farm ca. 30 km south of Pune, LE measurements during evening Agnihotra were made. Mr. D. R. Walhekar lives there with his family and their crops are used mostly for the family needs. No chemicals are used on the farm, and pests were successfully eradicated with cow dung, cow's urine and Agnihotra ash. He is convinced that Agnihotra works well at the farm, improving crops and their quality.

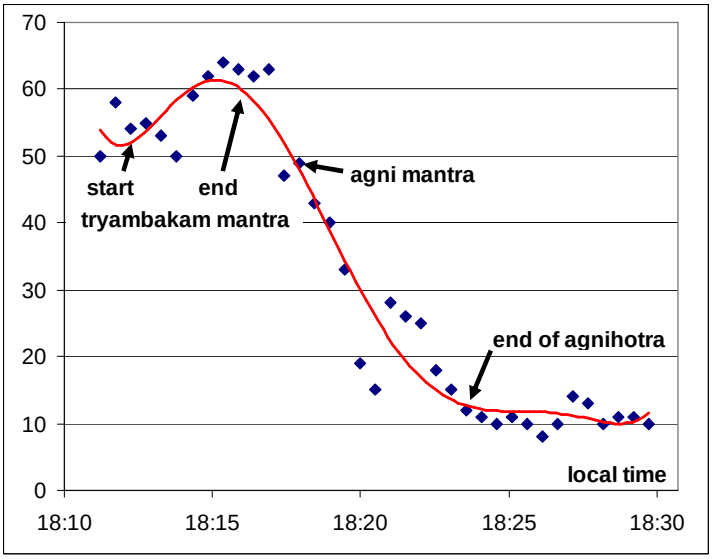


Fig.42. LE changes at sunset with Agnihotra performed by Mr. D.R. Walhekar at his farm in Baneshwar (Nasrapur, Tal: Bhor, Distr.: Pune), Jan.10, 2008. Red line indicates the best-fit polynomial function of LE dynamics over time.

Although there is a special hut for this purpose, this day Agnihotra was performed at open space in front of the family house, surrounded by garden with live green plants. Agnihotra ritual at sunset was preceded with four-minute *Tryambakam* mantra.

During the whole measurement period, relatively large – as compared to previous measurements – LE fluctuations were noted (fig. 42). This may be attributed to non-limited air circulation with mild wind from changeable directions at that time. However, some trends from calculated best-fit polynomial model are seen. The short *Tryambakam* ritual had interrupted natural evening LE drop in air, increasing LE readings till end of the mantra. Then during proper Agnihotra LE decreased with time till end of fire in the pyramid, and later for at least 15 minutes the same LE level was kept at the site.

This - still different from previous ones - model of LE changes around sunset confirms that all Agnihotra-related changes of LE dynamics always should be analysed in the context of a particular site with its conditions of ritual performance, as well as physical and biotic processes active around.

5.3. Sacred groves of Western Ghats

Fig. 43. Slopes of Western Ghats in their northern part (distr. Pune, Maharashtra). Patches of evergreen forests in this dry climate area occur where slopes intersect groundwater-conducting rock layers.

5.3.1. Introduction

The slopes of Western Ghats, in their northern part in District Pune, which was visited during a field trip, are build of basaltic rocks of volcanic origin. Their structure is heterogeneous, with compact, water-impermeable layers and patches, alternating with water-bearing and conductive looser rock material. Where such a water-conducting layer is intersected by a slope or a fault, there are patches of a rich vegetation, receiving water stored underground in sufficient amounts even to maintain viable, evergreen forests in dry climate of this area (fig. 43).

Fig. 44. The River Mula, which inflows to Mulshi Lake (dam reservoir) in the northern range of Western Ghats. Despite overall dry climate, the riparian vegetation communities are rich and diverse, what contrasts with the Narmada floodplain (see fig. 3).

Other spots of rich and diverse vegetation are located along rivers (fig. 44), which channels are fed with relatively stable output of water gradually released from groundwater reservoirs (also dam reservoirs have been built on some rivers recently), which are charged during monsoon wet periods. These riparian plant communities are much better developed that those seen at banks of the Narmada River.

The importance of land cover by forests in headwater areas of a catchment for stabilization of its hydrologic balance, especially in areas where precipitation is unevenly distributed in a year cycle, is emphasised by both academic and alternative landscape ecology and catchment hydrology. In traditional sustainable communities, especially where population density is high, availability of suitable ground for habitation and agriculture is limited, and where forests provide precious resource of fuel and construction material, effective conservation of such aquifer-protecting forests needs to use another approaches, understandable well and observed by local people.

Such a possible approach is to consider these forests to be sacred, with deities believed to inhabit these sites recognized by local people. This is the case. According to ENVIS Centre on Conservation of Ecological Heritage and Sacred Sites of India (www.ecoheritage.cpreec.org), Maharashtra has the second (after Himachal Pradesh) largest number (2,837) of known sacred groves (known there as *devrais*) among all Indian states. Almost all of this state's groves are located in districts of Western Ghats.

Due to its traditional protection, sacred groves may contain original species and communities, relatively unchanged by human management. This is the reason of relatively large number of biological - floristic, faunistic and ecological - studies, as well as studies on anthropology, traditional land management, sustainability and nature conservation, recently reviewed by Malhotra et al. (2007).

Various forms of cult of sacred groves are very old, considered remnants of pre-Vedic, pre-agrarian animistic customs and beliefs (Burman 1995). Gadgil and Thapar (1990) assume that introduction of fire-based sacrificial rituals and extensive agricultural settlements might have catalyzed the destruction of forests and wildlife. Even contemporarily, "sanskritisation" (Kalam 1996) of sacred groves, replacing worship of old local nature deities with widely known gods of the Hinduistic pantheon, and building temples inside these groves instead worshiping natural objects, is one of serious threats to ecological integrity of these sites, as well as general desacralisation of life even among the most traditional communities, which breaks taboos concerning lack of any inference to sacred groves. In Kodagu district in Western Ghats the total area under groves decreased by 42% between 1905 and 1985 (Kushalappa and Bhagwat 2001). Due to deforestation, contemporary groves have come to be the only remnants of the original large forest in a number of cases (Gadgil and Vartak 1975).

From the point of view of nature and environmental conservation it is important to note that sacred groves often serve as refugia to rare and endemic species of flora and fauna. 11% of endemic plant species to the state of Meghalaya are confined to sacred forests (Khan et al., 1997). Kushalappa and Bhagwat (2001) found that about 14% of tree species, 26% of bird species and 44% of the fungal morphotypes known in Kodagu district occurred exclusively in the sacred groves. Forest patches preserved on religious grounds are considered true indicators of the type of vegetation that once existed along these hilly terrains, long before the dawn of modern civilisation (Vartak and Gadgil 1981).

Many of plant species present in sacred groves are known of their medicinal value. Boraiah et al. (2003) note that people have tended to discover medicinal values more often among plants unique to sacred groves, than those found in other landscapes.

Paranjpye (1989) notes that sacred groves of Maharashtra were usually situated at the origin of fresh water springs and plays a vital role in protecting water resources. It was find that protection of such a forest spots is consistent with best-performance models of local communities based on pre-market economy (Joshi and Gadgil 1991), and that sacred groves were one of the finest instances of traditional conservation practices, based on simple rules, in many ways parallel the modern ecosystem approach (Gadgil and Chandran 1992).

Despite this still preserved ancient tradition and its importance to nature conservation, landscape management and integrity of traditional communities, and numerous contemporary studies, it seems there is no answer to the question: WHY a particular spot of land, with its natural communities, once was declared sacred? Was this an arbitrary decision of an ancient chief or spiritual master, based on some spiritual or other "subtle" qualities, unrecognizable by ordinary people, or are there any detectable and measurable factors, which might indicate the "sacredness" of a site? And how, during the long history of existence of these sacred groves, plain people have been kept convinced to believe and consider these sites sacred?

There is no answer to these questions in known literature, even more - such questions were not asked before.

When visiting two of Western Ghats' sacred groves, it become evident that some unusual tree forms (bent or fused trunks, irregular branches, spiral bark and timber grains, see fig. 45) are common there. Similar irregularities were often found in sites of local anomalies of Earth's magnetic field. Also, as it is described here in other chapters (3.6., 4.1 and 6.1), properties of natural magnetic field were applied in choices of temple locations, or magnetic material was intentionally used for their construction, probably to diversify and multiply possible effects on human consciousness. Moreover, as Chandran and Hughes (1997) note, stones (similar to magnetic ones used for temple construction?) or termite mounds (often attracted by irregularities of local magnetic field) may be present as cult objects in sacred groves. Then, paramagnetic properties of bedrock and soil may influence soil/groundwater relations, as well as enhance plant growth (to form a high biomass of evergreen forest communities) and stimulate particular species (Callahan 1995), including many plant species of medicinal qualities.

Therefore the question and working hypothesis is: whether sacred groves are spots of land characterised by local magnetic anomalies, which in turn influence groundwater relations, the composition, structure and growth of plant communities, possibly presence of animals with developed magnetic sense, and also human consciousness?

5.3.2. Valane sacred grove

This sacred grove is located in Mulshi tal of district Pune. It is a spot of evergreen forest, with a small concrete temple built inside. Some rough measurements of magnetic induction within this site revealed magnetic diversity, not only in numbers, but also in the direction of main magnetic vector. This, however, demands more precise studies, when measurements of angles of magnetic vectors need to be involved.

Outside the grove magnetic induction was homogenous, around 420 mGauss (± 6). Direction of magnetic vectors in several points inside the grove indicate probable presence of a magnetic vortex, with minimum detected value of 406 mGauss and maximum 456 - 460 mGauss inside the temple.

It was found that stones at the forest ground were covered with mosses in sites of low magnetic induction (410-416 mGauss), and with lichens in sites of higher induction (430-440 mGauss). There were no clear differences between these sites in stone material, light intensity or humidity.

Measurements of life energy had also shown some differences around the temple, however not so distinct as these found in the island temple in Maheshwar. Relatively high values were found at the temple entrance and outside it at its right side, contrary to low values in places where people usually pray inside (growing in the place of idols near the temple wall) and in exterior at the temple's left side.

5.3.3. Kalkai sacred grove

"*This sacred grove is preserved for centuries by local community in the name of Kalkai Mata. Fear of the Goddess's curse has kept people away from cutting trees, plucking leaves or even removing a dead wood.*" It remains "*a tiny island of biodiversity*" - from the information table at the forest entrance, designed by Oikos, www.oikos.in.

Fig. 45. Examples of magnetically induced abnormalities in tree growth in Kalkai sacred grove.

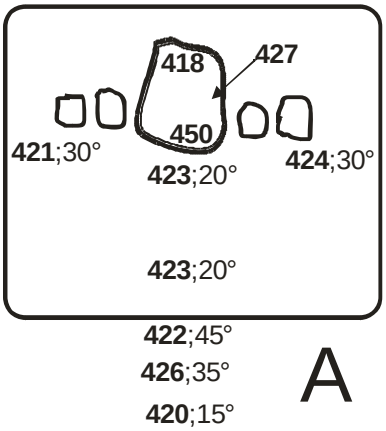
Fig.46. Old ceremonial place inside Kalkai sacred grove with large magnetic boulder as the main object to be worshipped.

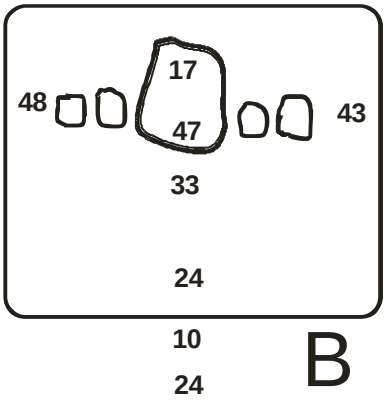
This grove, larger than the previous one, is located near Kondethar (distr. Raigarh) and Aadarwadi (distr. Pune). The area is also overgrown with evergreen forest communities, with some very big trees present there.

There are two places inside the grove used for spiritual practices: an apparently old, cleared rectangular area with a group of large stones inside (fig. 46) and a modern temple, built only a few years ago of concrete and other contemporary construction materials.

There are numerous abnormalities of trees, which may be considered typically indicating some magnetic anomalies of the area (fig. 45). Some

places where such trees grew, were measured with magnetometer. In such cases, differences both in absolute values of magnetic induction and in angles of main magnetic vectors were found at opposite sides of their trunks.





Some examples:

A skewed tree: 422 to 433 mGauss, with difference in horizontal angle of the main magnetic vector by approx. 30 degrees. Differences in life energy were also found, from 59 to 104, with the background value of 86.

A tree with spiral bark grain (fig. 45 B): 411 to 425 mGauss, with angles of main magnetic vectors approx. 30 and 10 degrees, respectively.

Twin trees (fig. 45 C): 414 to 421 mGauss, similar angles, compared to background level of 431 mGauss.

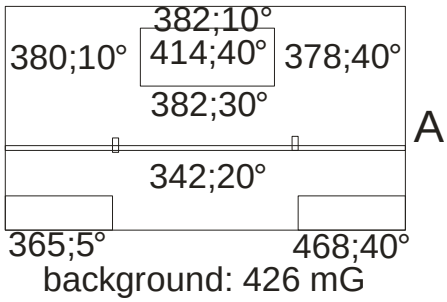


Fig.47 (left). A. Values of the strongest vector of magnetic induction (in miligausses) in the old ceremonial area in Kalkai sacred grove, with angles (in degrees from horizontal plane) of these vectors. B. Values of life energy measured at the same places. Dimensions of the place and stones not to scale.

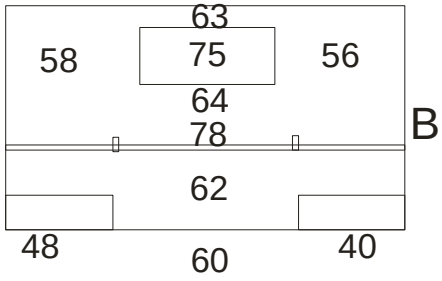


Fig.48 (right). A. Values of the strongest vector of magnetic induction (in miligausses) in characteristic parts of the new temple in Kalkai sacred grove, with angles (in degrees from horizontal plane) of these vectors. B. Values of life energy measured at the same places. Dimensions of the temple not to scale.

Both - traditional and new - ceremonial places are also characterised by complex and diverse patterns of distribution of magnetic induction and life energy measured there (figs. 47 and 48). The large stone, which is the main worship object within the traditional field has distinct front and rear magnetic and LE poles. Besides it, magnetic induction is rather evenly distributed within the whole field, only at the main entrance there is much larger angle of the main magnetic vector. The same point is also characterised by very low level of life energy detected there.

The new temple is characterised by magnetic induction values usually much lower then background level, except the main altar area and one side of its front wall. Here the entrance forms a space with tremendous magnetic gradient. For the whole temple, its left and right sides have contrasting angles of main magnetic vectors, even if absolute induction values are similar. Patterns of life energy there seem to be less clear.

5.3.4. Geomantic assessment of sacred groves

Other than magnetic qualities of a site of special properties, might be detectable by some sensitive people with use of geomantic methods. It was not necessary to use pendulums with biometers, as it is common in European geomantic procedures. Some geomancers - and probably also some spititually advanced masters - can even feel strong "energetic" peculiarities of a site even without additional devices. Tab. 2 shows differences between some geomantically detected characteristics of two studied sacred groves and areas surrounding them.

Tab.2. Geomantic energies (Bovis/BSM) and colours - sacred groves in Dept. Pune

Place	Bovis/BSM value	Geomantic colours		
		Primary (main)	Secondary (supplementary)	Additional
Background outside Valane	14,500	red	orange	indigo
Background outside Kalkai	13,000	blue	orange	indigo
Inside Valane sacred grove	32,000	white	violet	indigo
Inside Kalkai sacred grove	39,000	white	ultraviolet	indigo

Explanation of colours:
Red: *love, but may be also aggression (action, and not threat); need for activity.*
Blue: *order; radiation of regular structures; secrets of deep water.*
Orange: *easiness, entering zones; underground rock ranges; fertility; easy communication and culture.*
Indigo: *appealing to the history, old times, even very ancient, of the site. It is also a colour of mind, of a place good for thoughts and thinking people.*
Orange with indigo *which was found also in some European megalithic sites, may denote an excellent place for meetings and consultations, as for a person it means a mind with easy formulation of thoughts.*
White: *colour of peace, life; important site for the whole area (spirit of the region); empowering unity.*
White with violet *- old temples; spirits who already reached proximity to God, the source of Love.*
Violet: *place of spirit, prayer; grace; sometimes empty spaces (caves) or emerging energies of water veins below.*
Ultraviolet: *pain; human-induced wounds on Earth's surface; unhealthy houses and architecture; buried rubbish.*

Both sacred groves are characterised by much higher Bovis/BSM readings, belonging to causal or even spiritual ranges. Main geomantic colour is white (see explanations above). The supplementary colour changes from orange to violet, indicating places of spirit and prayer. The shift to ultraviolet in Kalkai grove, indicating pain and human-induced wounds on Earth's surface, may probably be attributed to recent construction of the new temple there, what demanded some clearing of vegetation and heavy earthwork at the site. The additional colour - indigo - is the background colour for the whole region.

5.3.5. Conclusions

Both sacred groves are special, distinct spots of the whole landscape of Western Ghats. These areas could be detected with a magnetic sense of sensitive people, or with observation of tree forms and shapes, probably also by observation of some plant species, preferring magnetically altered habitats, and behaviour of animals, sensitive to magnetic fields. Distinct magnetic and geomantic properties resulting in consciousness of people might help in determining these sites as sacred ones and convincing people to protect them.

However, special properties of such altered sites and their effects on health and consciousness of people are described mainly in weakly confirmed by scientific literature claims of geomancers and magnetotherapists. Moreover, these studies are mostly based on strong magnetic and electromagnetic fields, and research on biological effects of natural magnetic fields are scarce. Further studies are needed to describe relations between such altered fields and their flora and fauna, physiology of organisms living there and humans, hydrological relations within functional landscape units (catchments), and also anthropological studies describing not only names of deities believed to reside there, but also details of behaviour, folk customs, traditions and personal feelings of people interacting with such sacred groves.

6. Other short notes

6.1. Ellora and Ajanta caves

These artificial caves, carved out of basaltic (i.e. paramagnetic) rocks on slopes of volcanic Deccan trap massifs, are widely known as unique tourist attractions, declared by UNESCO as World Heritage Sites. These caves were built between 5^{th} and 11^{th} centuries A.D. and used as temples and monasteries of Buddhist, Hindu and Jain religions in Ellora and only by Buddhists in Ajanta. These caves as historical monuments and tourist attractions are described elsewhere, e.g. by Deshpande and Sawant (2006).

Main axes of most of these caves are perpendicular to rock edges at their entrances. But it is worth noting here that ninth-century Jain caves in Ellora, which are located somehow apart from the main cave complex, were designed and built strictly along the main, strongest axis of the magnetic field in this area. Also, constructors of the largest and the most elaborate Hindu temple, the Kailas, were probably conscious of magnetic field direction, as the main temple axis is perpendicular to main magnetic field lines, with its side panel axes parallel to them. It might be supposed that natural magnetic properties of these sites were used intentionally for better psychic effects in peoples' brains, according to their orientation in cave spaces when performing various spiritual ceremonies there.

A rock groundwater seepage site in Ellora was inhabited by a rich algal community with some cyanobacterial species and green alga *Closterium* sp. as dominants, with some diatom species present. Groundwater-fed pools remaining in dry season of the Waghora River at the foot of the Ajanta cave complex were inhabited by diatom communities, with large-celled genera as *Surirella* and *Gyrosigma*, similar to those of the river Mula in Lake Mulshi catchment.

6.2. Geomantic assessment of *yantras* and *rudraksha*

BSM/Bovis geomantic energies of different yantras (engraved on copper plates) were assessed at Dr. Sujata Vaidya's clinic in Pune. *Shree Yantra* appeared to be the strongest one (57,000). BSM/Bovis values for *Vastu Yantra* was 47,000, *Maha Sudarshan* and *Sankala Siddhi yantras* were 39,000 each.

A single *rudraksha* (*Elaeocarpus ganitrus*) seed assessed there had the value of 41,000. These seeds are believed in India to have divine powers of Lord Shiva and are used for spiritual protection and benefits of various kinds for their bearers.

7. General conclusions

Despite a growing number of claims, originated from various regions of the world, indicating that with performing of Agnihotra alone or with other Homa Therapy rituals one may improve quantity and quality of agricultural crops (even with no need of fertiliser use), their resistance to unfavourable environmental factors and pests, as well as animal and human health, there still are almost no scientific studies explaining at least some mechanisms of Agnihotra effects on living organisms. Often there even seems to be no doubt that these extraordinary, amazing effects should be contributed to the performance of Vedic procedures, but they probably never were studied with use of experimental designs demanded to be accepted as valuable scientific results.

According to Vedic knowledge, Agnihotra effects are mediated by changes in atmosphere within some area around a site of its performance, and by special properties of Agnihotra ash (Paranjpe 1989).

7.1. Agnihotra ash studies

Agnihotra ash is a substance, which physical and chemical properties may be studied and measured. Therefore experiments with ash effects are relatively easy to perform, having control samples without ash and/or with non-Agnihotra ash (i.e. ash made by burning the same material, but not at sunrise/sunset time and without mantra) as reference. There is an evidence that Agnihotra ash contains some nanoparticles (A. Shendye, pers. comm.), which are known of their powerful catalytic properties.

Kratz and Schnug (2007) found that addition of Agnihotra ash improves short-term solubility of soil phosphorus compounds, which then probably may be easier available to plants or soil microorganisms. Puchalski (2007) gave an evidence of changes in composition of aquatic algal/microinvertebrate communities, which were made more balanced in terms of internal trophic chain performance (containing diatoms with a diverse animal community feeding on them, and N-fixing cyanobacteria) when Agnihotra ash was added. Contrary to this, non-Agnihotra ash produced effects resembling typical hypertrophication symptoms (filamentous green algae and cyanobacteria known as toxin-producing, with few invertebrates). Moreover, Agnihotra ash improved growth of two species of aquatic macrophytes, even if water was organically polluted by decaying plant debris.

Further studies (Puchalski 2008) shown much better growth and survival of frog tadpoles in containers where Agnihotra ash was added at the start of experiment. This may be indirectly contributed to the improvement of food source (more diatoms) for tadpoles, and - as in the previous experiment - more efficient food chains.

7.2. Life energy - prana - in air

Contrary to these experiments, studies on atmosphere-mediated Agnihotra effects seem to be methodologically more difficult. The area affected (in the radius of hundreds metres, according to field observations) is too large even to start with a hypothesis that any measurable content of any substance produced and vaporised from Agnihotra fire might directly affect physiological processes of plants growing at edges of Homa farms. Moreover, Paranjpe (1989) warns that these energies in action should be on "*more subtle level*" than measurable with contemporary standard scientific equipment. Relating them as "*electricities*" (in plural) implies that there may be various kinds of subtle energies in action. But he also makes this statement a bit more precise, indicating that "*…by inducing a change in the atmosphere you bring about change in functioning of Prana (life energy)*."

Therefore, if there is a device able to detect and measure 'prana', the atmospheric effects might be studied. That is why the Heliognosis's Experimental Life Energy Meter, based on Reich's (1981) concept of orgonometer, where term 'orgone' is considered to be equivalent to 'prana' and 'life energy', was applied in these studies.

This device appeared to be excellent to register changes in measured energy in surrounding atmosphere, which were coincidental in time with events occurring during ceremonies. As these coincidences were repeatable, it might be concluded that - besides a typical diurnal dynamics - characteristic changes (increase/decrease) of life energy (prana) in atmosphere occur during Vedic ceremonies. These changes in time may be even contributed to specific processes of absorption and release of life energy. However, for future more detailed studies, it will be necessary to make measurements within the ceremonial area and in reference locations simultaneously, with a set of some meters.

Another reason why these preliminary data are still unsuitable to describe the results in a more comprehensive way is the fact, that measurements might detect energy changes only in a horizontal plane. The vertical flows of life energy (possible to be induced by fires, especially the big ones) were undetectable with only one probe located at a side of the ceremonial place. It is important to note this, as it was claimed that Agnihotra, and particularly Somayag, produce vertical flows of some kind of energy even up to a dozen kilometres.

New life energy appeared in air during different ceremonies: Agnihotra, meditations and various phases of Somayag.

Life energy was absorbed from air by plants (immediately after watering them growing in dry soil), by the process of lighting fire using friction of wood, with bursts of Somayag big fires, during grinding soma. The energy was absorbed from atmosphere by the tree trunk - condenser, in the highest rates when it was initially mounted in soil and then when it was brought to the river water. It might be absorbed in great amounts when clouds had appeared.

Decreases of life energy in air were coincidental with songs of birds, or with a cat's passage through a ceremonial field. Humans, with their measurable individual energetic fields, had significant effect on the whole life energy dynamics. The presence of people, as performers of rituals, decided on major LE dynamic patterns.

It is surprising that there were no repeatable pattern of life energy dynamics in time for various places, which might be considered characteristic for Agnihotra. The same Agnihotra in each site is different. It is not possible to describe a “typical” or “average” Agnihotra without broader context of the whole environment where it is performed.

7.3. Life energy in context

What is the life energy? It is rather not an electromagnetic wave. It seems to be somehow attached (or contained) with (air) particles, as movement of air masses by wind resulted in changes of it level. It may be absorbed by specific substances and living organisms. It may also be released by them, as well as during chanting mantras, making ceremonial fires and so on. It may probably be transformed into another forms of energy (or other spectra of it), during subsequent phases of Somayag, when another material was charged, basing on the energy previously accumulated.

The voice energy (mechanical wave frequencies) of mantras probably may be transformed in life energy, which than might be transformed into sound frequencies of birds' songs, as decreases of life energy in air was noted when birds started to sing. Paranjpe (1989) writes that "the quality of the voice of birds improves in the Agnihotra atmosphere". Also, during an extreme drought period birds from the whole region flocked together in the Homa farm in Tapovan, remaining their last refuge (B. Johnston, pers. comm.).

It is interesting to note the interactions of life energy with plants. Usually, in a diurnal cycle (at least during cloudless Indian dry season), life energy dynamics is similar to the dynamics of solar light energy. But in areas with dense growing vegetation, a further LE decrease has been noted during the first hour after sunrise. Moreover, during Agnihotra, the LE level was even lower than expected from mathematical model. Within the same cycle, the evening Agnihotra had produced an excess of life energy, remaining for the night, when its background level is usually the lowest.

It seems that plants need this energy to start their life functions, with the light phase of photosynthesis as the most important one. The LE absorption process is observed after sunrise, as well as after watering previously withered plants. Then, after some time, this process is reversed and plants release life energy to the atmosphere.

This may be understood better when compared to a human-invented machine as a car: to make its engine working, we need to provide some amount of electricity from its battery. Then, when the car engine is in its full motion, it not only produces mechanical energy to move the car, but also to rotate a power generator, which in turn charges the battery with electricity.

Therefore, for further understanding of biotic processes affected by Agnihotra, it is necessary to study the dynamics of physiological processes, especially the reactions which initiate whole process chains, together with measurements of life energy. It would be not surprising to find that light is not the only energy needed to start photosynthesis, the mayor process of organic matter production in our biosphere. Confirmation of such a hypothesis would have

enormous implications for our understanding of fundamental biological processes, as well as for applied biotechnology.

Another conclusion is that any experiment designed to study only Agnihotra (or other Vedic ceremony) energies without broader consideration of the vegetation and whole biotic communities, including humans present in the area and participating in these ceremonies, will give only fragmented, irrelevant data. Such fragmented laboratory studies, or separate field studies on only soil or only plant or only air etc. systems, even technically well done, may have only low and limited value for any understanding of Vedic rituals, or may even lead to their misunderstanding.

Here comes the need of integrative scientific approach. Contemporary advanced science evolves to integrate various disciplines and tends to be no more the same science as it used to be even 10-20 years ago. Going this way, integrative science gradually becomes mature enough to start serious studies on explanation of environmental phenomena related to Vedic practices. Also, as our presence and action is another important factor, we should no longer rely on the classic paradigm of natural sciences, separating the observer from the subject of study. Instead, we should adapt approaches of quantum physics and context approaches of natural sciences (also known as Goethean science, and science of qualities).

Another area of studies of life energy (and Vedic rituals producing it) is the network of negative feedbacks, or the mechanisms of the whole ecosystem internal regulation processes. We should note that LE levels and their dynamic patterns which we measure during ceremonies are not results of the ceremony alone, but they are results of a site- and time-specific balance of LE production, consumption and transformation, where elements of the whole ecosystems are involved. As ecosystem structures and intensities of their main internal ecophysiological and bioenergetical processes were different at studied sites, the LE measuring results obtained for each site were so different. The presence of biotic regulation mechanisms and their enhancement with Agnihotra is evident in well balanced agricultural systems, where excessive pest or weed development - according to Homa farmers' claims - is not a problem. Well balanced, effective trophic chains was reported in my previous studies with Agnihotra ash (Puchalski 2007, 2008). This approach is similar to the way Ayurvedic medicine has taught academic medicine about roles of adaptogens in human physiology.

It is noteworthy that spiritual masters and advanced ceremony performers - even without sophisticated measuring equipment - feel, know and are conscious of these energetic patterns. Such measurements may confirm what they know well, but is expressed in another language, not possible so far to translate directly into the language of science. Here LE measurements may help less sensitive (then these extraordinarily gifted) people to control correctness of their ritual performance, and improve detected weaker phases of their performance when necessary.

8. Future perspectives

> "*Let us begin to record data, which forms the basis of scientific analysis for presentation of Agnihotra as a scientific process of purification. Let us not limit it to purification of the atmosphere. It has a deeply purifying effect on all of Nature, on human beings' bodies and minds. Further scientific studies could actually show the effects go beyond what man can see, go beyond what man considers to be his atmosphere. But those would be more sophisticated tests and likely would not be measured in quantitative terms*." (from Parvati's Orion Messages, Jan. 14, 2008)

Yes. With some recent experience in studies on integrating some aspects of ancient and traditional knowledge and practices into functional ecology of complex natural systems, with obtained results, discoveries and surprises, with my efforts to formulate hypotheses about how it might work together - now, after one year after these studies, I see a very profound, even prophetic sense in this intuitive message.

Integrating effects of Vedic rituals into academic science appears to be a difficult task. It is due to the finding that even at the level of elusive "life energy" there is no simple model, which could describe something as "characteristic for every Agnihotra". Moreover, it appears that the same ritual performed in different place may have completely different energetic characteristics. The general conclusion is that there is unlikely even to think about a "science of Agnihotra". All effects need to be studied in context, taking into consideration the whole ecological system, at least with major interactions of main elements which comprise the whole system.

Such context approach may be compared to the philosophy behind the context menus of advanced contemporary electronic devices. People with traditional, mechanistic approach to technology, science, and life in general, have difficulties in understanding it. However, other people intuitively see it as obvious and natural.

Traditional for science, mechanistic, one-variable approach with simple tests in many cases may lead only to misunderstandings. Findings that e.g. Agnihotra ash increases solubility of soil phosphorus may be considered

beneficial for increasing crops of cultivated plants, but from the point of view of water quality and catchment conservation it might be considered highly undesirable. Standard tests for substances present in Agnihotra vapours and fumes probably would lead to ban people to be present in such atmosphere.

However, the practice (although not sufficiently documented) indicates that these dangers are not true. Is therefore academic science wrong? In my opinion, not. Such data may be considered alarming, but only when derived from their broader context of whole system functions. Therefore **each research, describing and explaining effects of Vedic ceremonies, should be planned as complex, interdisciplinary system studies, where academic scientists - physicists, chemists, physiologists, ecologists, and others - cooperate together and with Vedic scientists**, who can provide another perspective of understanding of the whole system studied.

One more important perspective is that of ritual performers. Advanced performers are conscious of energies, changes, effects connected with their tasks. These effects are revealed and perceived in personal energies, behaviour of people, and their interactions with others and their environment. **This may be scientifically assessed by psychologists, but this level of interaction opens another important perspective of the whole system, i.e. mind-matter relationships**.

This leads to open completely new perspective for studies of natural systems. There is a general paradigm in academic natural science, which separate objects from subjects, observed system from the observer, matter from mind and consciousness. It is a strong need to apply Goethean science approaches in further studies, to unify the whole system, to follow the path which quantum physics have already entered.

This is the path where not only academic and Vedic science can meet, but also science may encounter spirituality.

This path is not easy for both science and spirituality. It needs to break some deeply grounded habits and limitations. Quantitative science needs to meet the science of qualities. Academic and Vedic sciences need to understand their completely different methodological approaches. Science and spirituality need to recognize their completely different languages.

Another way is to describe and document effects of Vedic ceremonies in a way how it has been done recently in some texts and internet pages of some organisations promoting Agnihotra worldwide. In my opinion, this explains nothing and may even be harmful, deepening even more the existing precipice between rational and magical philosophies of life within a society. Showing examples such as, “the person in this photo was ill and now is healthy” may have even negative impact in general society of ‘developed’ countries, except few individuals only. Contrary to some other cultures where the magical is still present in peoples’ everyday life, the vast majority of European people will neither accept nor believe in ‘miracles’. Even if seen with one’s own eyes. Such cases and descriptions even are easy to be ridiculed by sceptically-minded people, especially these who are not interested in introducing concepts and approaches which may appear competitive to their well grounded practices.

Therefore further investigations on effects of Vedic ceremonies, especially of very powerful Somayag, which is planned to held in Maheshwar also in subsequent years, need to be complex studies, done according to well organised and sufficiently in advance designed programme, consistent with best available experimental methodology, and led by (or at least discussed within) an interdisciplinary international team of scientists. Only results obtained in such a way may bring a significant value. It is unlikely that any simple tests derived from the whole system context, or random small studies done by a fortuitous scientist would bring valuable results.

Before starting such a project, it would be beneficial to organize an international conference on integrative scientific approaches to traditional knowledge. These results, described in this report, might be put there for discussion. They provide only some introductory background, and do not tend to give any final explication of nature laws behind the results of Vedic ceremonies.

However, some scientific questions, even of fundamental importance, may arrive from these results. What life is and how it is supported, what is enigmatic "life energy" and other forms of energy, these 'electricities' involved, what are characteristics of plasma of sacred fires and how it interacts with other forms of matter, what may be interactions between mind and matter, what is the role of human consciousness in functions of natural systems and so on.

There are more questions about **magnetic fields as the ecological factor** underestimated so far, and what is the nature and real **importance of geomantic fields** in functions of natural systems and human psychology. Some observations on properties of plants and other materials used in ceremonies may open new ways in **studies of material technology**, as well as describe new or underestimated qualities of organisms important in their interactions within ecosystems.

Such findings may provide a background for multiple and diverse applications in practice. There are many possible fields of application: agriculture, nature and environmental conservation, landscape management, material technology, human health, social relations and possibly many others.

Contemporary science never works alone. Always it form only a part of partnerships with organisations which might be supported by scientific results, therefore interested in cooperation with scientists. Nowadays, no science

foundation outside India will finance studies on integration of academic science and Vedic practices until there were no high quality results previously found and described using own financing of research. Only already having such good data (up to date, there are almost no integrative scientific data on Agnihotra effects meeting the scientific criteria of good quality) there is a possibility of application for a grant to really good funding sources, including United Nations' agencies, with enormous social impact.

Some Indian-originated concepts went this way, have developed into respected organisations or movements (e.g. Maharishi's Multiversity, Ravi Shankar's Art of Living) and now their acceptance and importance in general society grows enormously. Without active integration with modern academic science, the Homa Therapy movement still will have only marginal importance in general society in 'developed' countries.

Therefore it is a great future mission for organizations and networks promoting Homa Therapy, in cooperation with Indian institutions supporting science, social development, sustainability and national culture, to start to organise a platform with its own funds, supplemented with effective international fundraising, which might create effective support for a scientific council, then preparing projects intended to obtain results of good, internationally accepted scientific quality. In nature and environmental conservation and management it is advisable to refer to Article 8(j) of the Convention on Biological Diversity.

It is just time for general resuscitation of the Traditional Knowledge. Contemporary global energetic, environmental, climatic and economical crisis may be perceived here as an important turning point for rethinking the backgrounds of our knowledge and its practical applications.

I am aware that some ideas presented here may be considered controversial, but I also understand that it is time to develop, discuss and verify them from various perspectives in order to produce new, viable concepts to emerge from the meeting and cooperation of academic science, alternative sciences and parasciences, Vedic science and Vedic spirituality, which melted together may - as I believe - produce some new qualities of importance to science and to general society.

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My institution, The Nature Laboratory, will continue studies on issues described and discussed in this report, will try to receive feedback from people and organisations representing various backgrounds, and try to organise a research network of people interested in explanation of phenomena described here and in integration of traditional and ancient practices into everyday life and programmes dealing with nature and environmental conservation as well as sustainable agriculture and landscape management.

Therefore everybody interested in discussion, cooperation, invitation to make a case study or in providing financial or any other kind of support for this work is encouraged to contact us. The postal and e-mail addresses are given on the front page of this document. In the near future an internet page will be launched.

The Nature Laboratory is committed to a paradigm shift in complex system organisation, leading to introduction of cooperation whenever possible instead of competition.

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