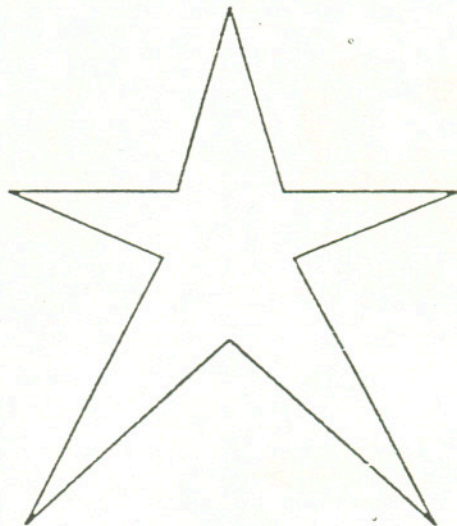


***Development Alternatives***  
*A Personal Appreciation*

Christian de Laet

Diwali 1993



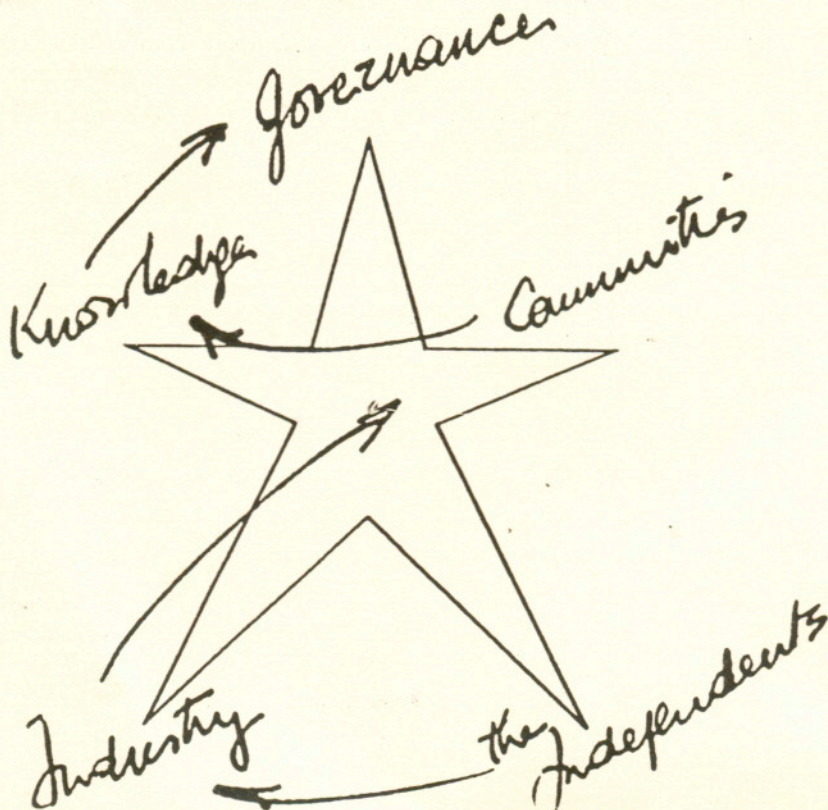
# Development Alternatives

*A personal appreciation dedicated to  
Ashok Khosla, to his staff and supporters  
and to all those who believe that  
development has a meaning.*

As a private development agency, DA shares the field with other role-players in the constellation of development agencies in India.

These can be represented at the five points of a pentagon:

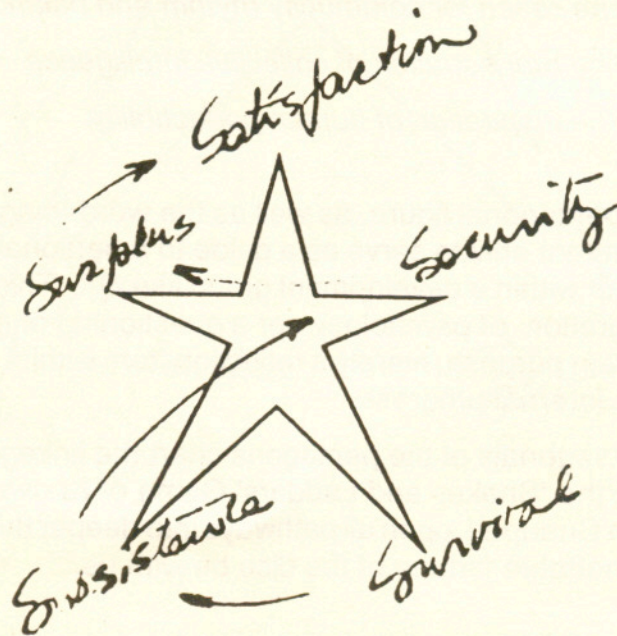
- ★ *Independent organizations and their support networks*
- ★ *Business, industry, artisans, trading houses, banks*
- ★ *Local communities and affinity groups*
- ★ *Universities and research centers*
- ★ *Governments and para-public organizations*



DA is an independent organization. It also operates as a support network, a conceptual and functional bridge between the public and private sectors. In this mode, DA champions linkages among the five major sets of role-players, for example:

- ★ *Development from the bottom up and its logistics*
- ★ *Joint ventures and cooperative exchanges*
- ★ *Active intersectoral and associative linkages*
- ★ *Value-added entrepreneurship*
- ★ *Diversity of human cultures and of nature*

Moving from missions to vision, the pentagon charts our pathways as we symbolically emerge from **survival** to **subsistence** and on from **security** to **surplus** to **satisfaction**, the ultimate sense of achievement that comes with good governance of the self, of society, of our fellow animals and other life forms.



It doesn't matter if our PATCHwork, Pentagonal, Alternative, Tensegrity, Comprehensive, Holistic work, should rather be hexa-, hepta- or octo-graphed. It is intended as a driving image, not a road map.

Creative growth may be sparked where the opportunities offered by the symbol meet the actual vision, raison d'être, sense of purpose, leadership and missions of *DA*. The symbol serves too as reminder of a vision, sustaining *DA* through obstacles and frustrations and containing the field and stream of our resources and efforts.



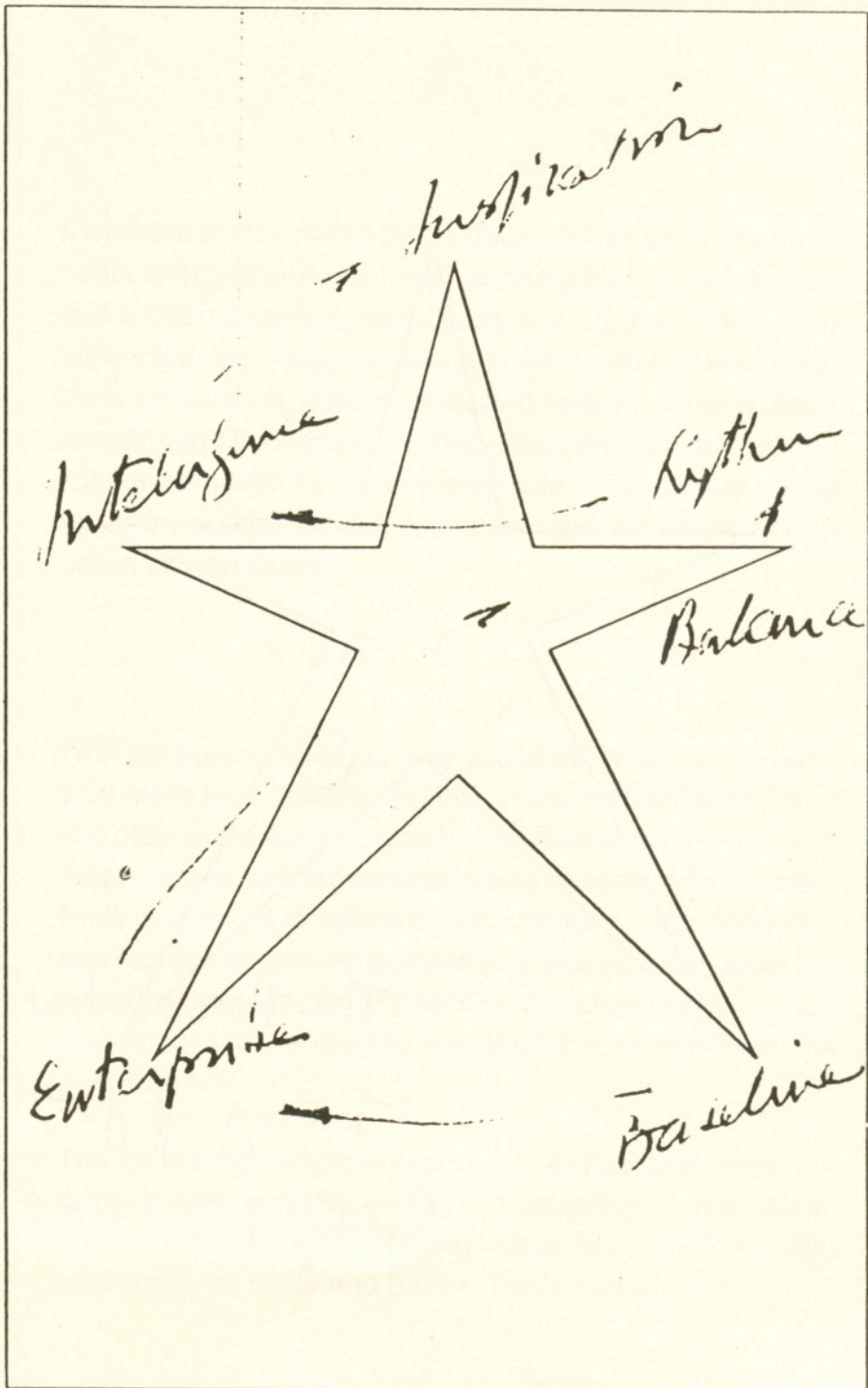
*DA*'s progress can be looked at as a step function from 'the profane to the sacred', from 'poverty to self-realization', a sort of human stairway to higher consciousness:

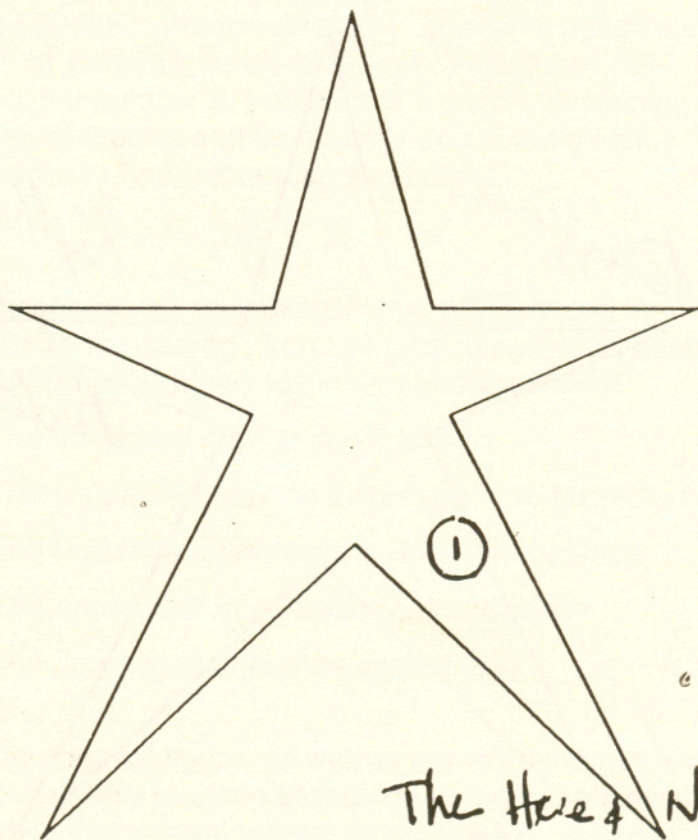
- ★ *The 'here and now' of survival tools*
- ★ *The sense of enterprise & of environmental awareness*
- ★ *The reach for community rhythm and balance*
- ★ *The orchestration of collective intelligence*
- ★ *The inspiration of human perfectibility*

The pentagonal figure, as well as the word-images above are meant only to serve as a guide to a personal sense of growth within a development group like *DA*. This is not an exploration of psychology nor a questioning of mankind's ultimate purpose, merely a reflection from within, to benchmark internal progress.

The diagonals of the pentagons chart the linkages which, as in the 'Snakes and Ladders' Game of Knowledge, the Gyan Chaupad, open all pathways into deeper things. May the ineffable fortune of the dice be with us.







The Here & Now  
Taking off from  
Poverty & Survival





If we want to stop the slide into degrading poverty, we must begin with 'yesterday's meal': cooking fuel, cookers, food and liquid containers, elementary water pumps, mats and broadcloth weaving, mudblock shelter and the like. Such tools for survival, subsistence, and relative security are a baseline in *DA* operations. They must be provided at very little or zero cost as there is very little or no money to pay for them outside of subsidies; and aid assistance often bears hidden costs.



With the pressures of survival eased off, what comes next: a bit more time is available, but space and distance come into play; there are time lags before food is consumed, and reserves are needed against a bad season. More distant fields or different locations are used in turn ... transportation and storage become important. In a village, many tools are found around the blacksmith's or the bicycle shop: good places to start enlarging the toolkit and improving its performance.

The list is long: simple equipment to extract leaf protein or to make carts, conduits, rooftiles. In designing such products, *DA* aims for ease of handling, relief from drudgery and profitability of trade and barter. Tools and equipment can



trigger self-confidence, and provide the material security that makes a tradeable surplus a real possibility. All this, however, is notional. In fact, the steps vary considerably in the light of local culture and technical maturity, and with what local natural resources are available.

DA's technology arm, TARA, focuses on the physical equipment and on instructions and training for its use. Looms and pirn winders, block presses, ferro-cement storage bins and jars, roofing tiles, methane digesters, woodstoves and solar cookers, bicycle carts, micro-industries of paper and cardboard. Throughout, an understanding of human and natural forms guides the processes of design and production, and leads to more efficient energy flows.



*The flowers are pretty, the leaves an interesting green; the plants grow fast, and seem to send their roots deep ... Water hyacinths are a nuisance; with their floating roots, they huddle downwind, plugging up water intakes. Not a fishing line escapes entanglement, not a rowboat remains free. What calamity is this which fast reduces a lake to a dried-up pond?*

*Eichornia Crassipes, Salvinia Auriculata and their consorts around the world are a nuisance to lakeshore or river dwellers. Grapnels are used to bring the plants in, and the protein-rich leaves are fed to cattle ... with some molasses or other local sugar mixed in to ease digestion. The rest goes .... where?*

From survival and subsistence to security and surplus: awareness expands, and opportunities too; other technology sectors become relevant, as do other ways of converting raw energy sources. Industry and parsimony; the sense of turning out good clean products as a failsafe to good clean trade.

Where several generations of technology coexist, there is gradual evolution rather than revolutionary conversion. As the technical temper rises, there are openings to more complex innovations. Secondary energy sources such as methane and charcoal come to the fore: simple mechanisms must be transformed into sophisticated equipment. The biomass is more elaborately transformed into medicines, cosmetics, food, additives, dyes ....



*The monsoon is a harsh taskmaster. Plants bloom and wilt quickly. What can be done to catch the crop efficiently? Why not make perishable flowers and fruits economical, in a sustainable fashion, by converting them to essential oils, or concentrated additives ...*



The fabric of development is being woven. As people become free to lift their gaze, details appear that had been blurred, nuisances and inefficiencies become noticeable. As technical awareness asserts itself, the idea of nature takes hold, now perceived as a distinct entity. Animistic belief yields to conscious marvelling at the works of nature, and at the human capacity to shoulder the process.

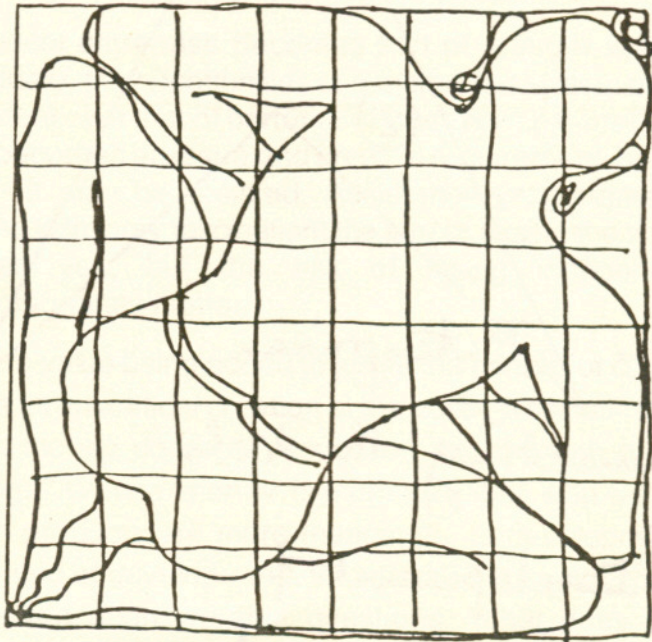


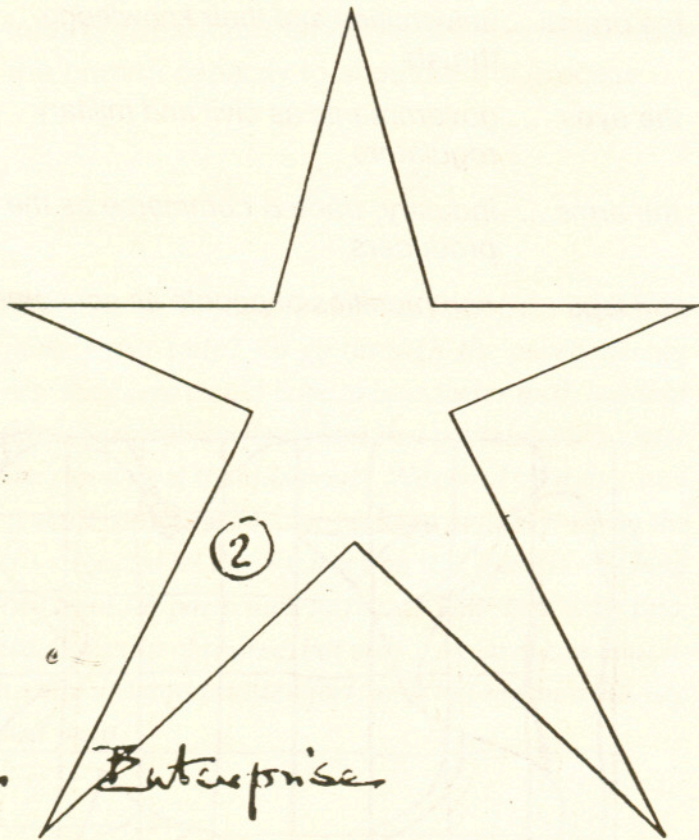
*Might the stems contain the kind of fiber from which we can make paper pulp? To go through the paper-making process, the fibers would have to bear water well, but that shouldn't be a problem for a plant that contains 95% water ... How can we get that fiber out? We could let it dry, and mix it with caustic soda ... or perhaps just let it sit by the water's edge and let the sun work on it ... there is still land aplenty, and no particular hurry ... This would be raw, unbleached pulp of course, but still ... A farm can haul in a ton a day without undue effort, and that means a 50k bag of dried pulp.*



Several generations of technology coexist, and also several layers of humanity. An outsider's look at Vāstu Purusha attracts an analogy with society at large and its proportionate constituents:

- ★ *the brains ... universities and their knowledge thrusts*
- ★ *the eyes ... governments as civil and military regulators*
- ★ *the arms ... industry, trade & commerce as the producers*
- ★ *the legs ... communities of people as consumers*





The Enterprise  
Connecting the Tools  
for Development of  
Environment



The pressing need to survive and subsist gives way to relative security, perception extends to other needs, and the means of satisfying them become more sophisticated.

As the complex reticulation of development sets in, a service sector emerges and, here and there, an advanced tertiary. The loops become longer; they take longer to close and to bring in the expected income. Private capital saved from earlier ventures gets used up ... but public support in the form of prepaid services or sales subsidies can be politically erratic and psychologically depleting.

The local enterprise becomes part of a larger web and, eventually, the opportunities of a monetized system become apparent over that of barter or of 'cash on the barrel'. Cash flow becomes an issue and credit a requirement, however much it may be resisted. Assistance programmes are viewed with leery fascination: the lure of easing the financial burden yes, but the risk of losing independence proportionately higher.

Is there value being added to justify the printing of currency, or is it all an artificial creation of the political societies? How much money does get issued on the strength of these savings? Whose 'money' is more valuable, who will judge which products are more meaningful to development, to what kind of development, for whom? These are complex and often unanswerable questions. What does nature 'think' of it all? There must be a vision to keep it all together, and supporting missions to keep it energized.

As producer, DA's missions require that it remain alert to new needs; as catalyst, it sparks local enterprise. Throughout, the vision nourishes sensitivity to human and natural communities, promoting overall balance, 'sustainable development'.

Economy, ecology, environment and energy, all are webs within the tissue of sustainable development—but some of their strands can be inefficient, or counter-productive, or have the wrong time horizons. Modern communications have ensured that people can now know who has what, but the high burden of indirect subsidies and the social and environmental costs of our technical marvels, often remain hidden. DA aims to bring these notions within the range of perception of the consumer—and of the producer, to generate discernment.



*The cattle wades into the water, and feeds directly off the leaves, or is fed a mix including some sugar to ease the digestion. This is good, but the bag of pulp is a cash crop, and that is better. Now, who will buy it?*

*Paper mills, even village-based local ones, are not really organized to recover used materials to be used as pulp. That takes a specific enterprise. What would raw pulp be worth once we subtract the cost of its transport, and of refining it? A couple of rupees a kilo at the mill may not bring more than a fraction of that to the farmer but, everything considered, it may mean 20 rupees a day. We'd better work this out again ...*

*If we want to grow water hyacinths to harvest for pulp, what kind of holding tanks can we use in a river bank farm? The best would be to dig a hole in the ground ...*

*If we do that, we could use the excavated soil to make construction blocks or bricks. Would they be solid enough? Does a single-floor structure require burnt brick at 40 kgs/cm<sup>2</sup>? 4 kgs would seem enough, but in any case, a well-pressed, well-cured mud block can give us much more, perhaps 40. Could the quality of the blocks be improved by a scientific understanding of soil stabilizers, by preference obtained from local sources?*

*Can we build storerooms for pulp and stock more of it to get us a better price? We now know how we can make mud blocks for the walls; but what about the roofing? Suppose we make tiles from pulp, dipped in cement or some other stabilizer ... would that do the job? Do we need some kind of cooperative infrastructure to stabilise the prices of supply and demand? If so, we will be quite transparent about it: everybody should know what's happening.*



DA is concerned with the quality of the equipment it manufactures, and with developing the closeknit, highly efficient delivery systems essential to sustainable development. The human factor takes on key significance at all stages of the pathways to the ultimate user. Ease of manufacturing is important, as is ease of use by the client. Quality of production and, at the other end, consumer satisfaction at 'finally' being heard and served.

Like other producers, DA has to tap the resources of science, grafting them appropriately onto traditional systems of knowledge. We are attentive to the frontlines of discovery, filtering and blending what is useful into the appropriate mixes and alloys needed for sustainability, in support of our development vision.





*How else can science help us turn this nuisance plant into an efficient economic good?*

*We learn that the roots of the water hyacinth are adept at picking up heavy metals. Could concentrated growths of this plant be useful in industrial pollution control?*

*Someone has noticed mushrooms growing on a stack of these roots dumped in a cellar. What kind of mushrooms are they? Could they be edible? If so, who has basements where we could grow them on a sizeable scale? Let's try Hyderabad, where the Hussein Sagar is choked with weeds: its fortifications have underground chambers. Who can do the chemistry for us? Good thing there is a Regional Research Laboratory there.*

*And what about the water? We know that this plant evaporates water fast. What kind of water does it produce? Might it be drinkable? Would there be any side effects?*



The vision is powerful: an end to poverty; our ecosystem healthy and producing for our needs and our enjoyment. The vision fuels us, seeping through every available rivulet of development. It is manifest everywhere, it is embodied in everything we do. No longer is it the purview of a remote priesthood, nor that of an all-knowing, all-powerful State.

But embodiment of the vision requires a raising of awareness, the fostering of informed enterprise and of more vigilant consumers, progressively better informed as to the end-use of their limited funds and savings.

Both producer and consumer must become more completely involved in building the weave of the nation, not as 'legs' but as 'arms'. Theirs is the right to be artisans, with permanent seats at the banquet of life.

Global or nation-wide enterprise has no foundations unless it has access to the sense and substance of the artisan, an artisan born of the apprentice, the one who learns from within. Modern nations have abandoned the apprenticeship system to their peril. Modern knowledge cannot be properly grounded without it, and without it we lose the generational bridges with the cultural grandeur of yore.

The Shilpis, in India, were "knowers of all the Shastras and adept in the proper application of them, of their knowledge, their wisdom and of the creative impulse which surges from their touchstones." ... "With keen intellects and adaptable minds, always truthful and bearing no enmity towards anyone" ... they built temples, as we should be building our temples, sacred and secular, physical or metaphorical.

The need for lifelong apprenticeship cannot be over-emphasized. It starts from the earliest age, and leads to a sense of *métier*, of craftsmanship, of impeccable quality. It is the generator of curious and assertive minds, the regulator of firm and dedicated action. *DA's* schooling in action research catches some latent talents; it will progressively assume a key role in promoting a deeper, more consistent learning environment as early as possible in our own Shilpis' lifetimes.

Shaping a perception of nature and of one's own awareness of our place in the universe should also be initiated early. Scanning and harvesting the traditional knowledge systems must go on: without it, scientific modernity on its present track has no future.

Committees  
of People  
&  
Nations

Security &

(3)

Balance



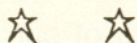
Prime clients and end users of our efforts, they live in 600,000 villages, or at survival level in towns and cities. These are the people we are attentive to and whose yet-unrealized potential guides our innovations. Their poverty is our shame, a reminder that with half of mankind or more among their numbers, development, at some critical level, has so far failed.

Nature, more covertly perhaps than people, is also showing 'impatience', with untold ecosystems breaking down, many of which we never really knew. The environment is not only the supplier of our resources, it also provides the setting in which we find our humanity. Here it is no longer a 'social' cost, a nuisance in our profit equation; nor should it be just an abstraction in the promises of our leaders. Nature is inappropriable, whether by public or private interests: responsibly, we should make it a Common Good in which we all have a stake.

Our communities are one of the first levels of organized 'public' interest, the melting pot of our personal expectations of development. We must all contribute to them, in full appreciation of our technical advances, but not without the wisdom of the elders or the teachings of nature.

Everybody wants more but not the cost of it. Sustainable economic growth is not a feasible thing in the long run: at 5% p.a., the resources needed double every 14 years, 128 times more resources in a century, and what about the poor? Whose resources, for whom?

'Sustainability' is paradoxical as a qualifier for 'development': what unfolding of development, if it cannot be sustained? In the end, what is sustainable is the growth of human attributes leading to better organization and planning, to more meaningful ways of delivering the promises of development to our human and natural communities.



*Could we contain water hyacinths in micro water basins, with bunds or check dams and weirs? If so, this might be used to help green arid zones, or to avoid later dangers of over-irrigation. Is it possible to remember, to find out, what once grew in the arid zones, and to deduce what the soil conditions would have been as part of such a symbiosis?*

*Geo-stationary satellites can give us very precise information on soil water content, and can map very shallow gradients. Could we use this information for time-space maps over the course of the seasons and save guesswork and inefficiencies for our ground crews?*

*Can we get precise information on surface water flows for the siting of small, high-performance check dams in small, sub-river basins: if so, we could look at water yield and protection with new eyes, particularly in arid zones.*

Like water seeking its own vivifying course, our progress is not through straight lines, which don't really exist in the 'sensitive chaos' of nature. Windows, book pages, computer screens, like bomb sights, reduce our access to the outside; too easily, we come to believe that what is outside the frame is collateral: a great beyond ever ready to receive our garbage, otherwise of no account. These are not the 'gates' which open us to new understandings outside, and within.

Organic growth in nature, in the shape and proportion of human bones or in the patterns of sunflower seeds—perhaps



also in the rate of growth of water hyacinths—follows the Golden Mean. This age-old proportion is based on 'mean and extreme reason', as Plato had it. The 'golden ratio' is also found in the relation between edges and diagonals in regular pentagons—which cannot be fitted next to each other to cover surfaces completely. They leave open spaces, unlike the squares and regular triangles used to tile the floors of the temples, products of priestly contemplation. But the soaring heights and acoustics that elevate the spirit are designed with the proportions of the Pythagorean 'trademark'.

In the here and now our institutions including those at the community level have to be humanized. To marry the sacred and the secular is also the vitalizing purpose of 'bridges' crossing the generations between modernity and tradition.

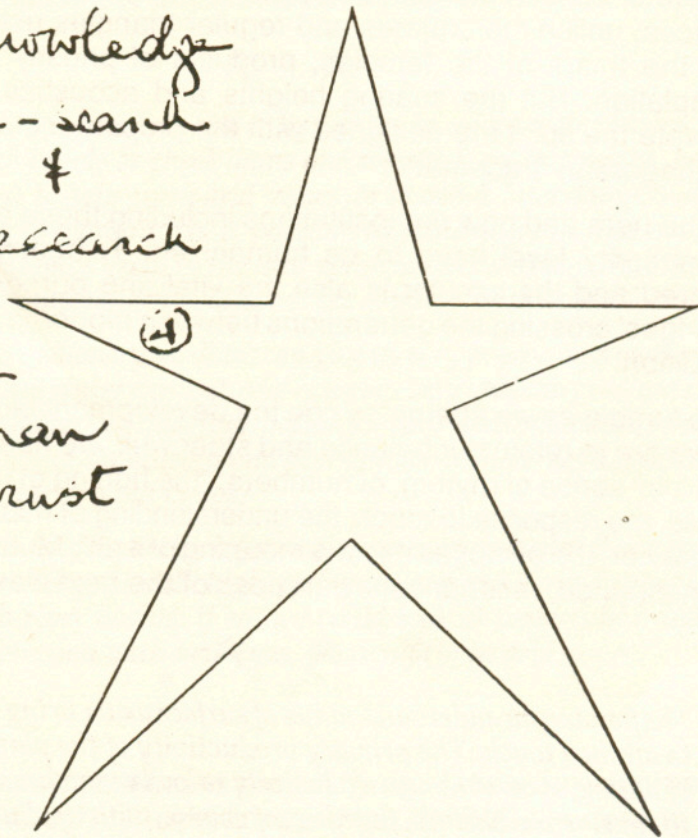
We fumble as we attempt to ride the development bicycle. If we are to retain our balance and steer well, we need the Shilpis' sense of rhythm, of numbers; "the honing of tactile skills, the response to touch, the understanding of materials behavior, the glimpses into the meaning of it all". Mutuality, consonance, resonance; awareness of the next wave.



*The flowing meanders and eddies of surface water bring life to all they touch. The primary productivity of the planet, of nature, is owed almost exclusively to lowly marshes and to continental shelves, together, of course, with the Sun's boundless energy, our only steadfast source of neg-entropy. Water, a bizarre mineral endowed with extra-ordinary chemical, mechanical, electrical, biological properties ... our connecting link with the magic of renewal. Its meaning is in its interstices and in the context of its atomic structure; its stability is in the constant polarity change in its tetrahedric electro-valence. Do we really believe that it is sufficient to clean and filter H<sub>2</sub>O to get Nature's water back in shape and spirit to do its ineffable work?*

Knowledge  
He-search  
&  
Research

(4)  
The  
Human  
Thrust





If knowledge is to thrust forward and help us on our journey, we must be atuned to contemporary issues, not scavenging the past. It is no longer admissible for institutions involved in the governance of nations to live off their accumulated assets, to remain closed to the crises beyond their doors.

An actual development project can provide the best possible kind of interdisciplinary experience. Books will not do it, nor the arcane halls of academia or of pure science alone. It is in the open fields of human experience that the useful bridges will be built to conduct, back and forth, the knowledge streams which connect brains and hearts with the reality of the day-to-day world.

Much of the knowledge, and perhaps of the wisdom, behind *DA's* thrusts is not recorded. Started as intuition, then deepened as perception, it is barely articulated in conceptual guidelines. Creativity and innovation sprout as much from its open as from its strategic positioning; moves stem from the opportunities offered to inspiration by options kept open.

The next decade bodes ill for those who will deny the spirit and the heart. Already we spend more energy in hiding our humanity than in exalting it. Even if good 'economic weather' has left us, the engine of modern science selectively applied can take us, in our traditional boats, to safe shores. Rowing alone is not going to do it, nor is there any impelling need for Nature to give us sails to save us.

Existing knowledge centers have been most helpful to *DA*, opening their doors and carrying out research of critical



import to our missions. They should also keep up their own momentum by striking new covenants with business and industry, with local communities, with the independent sectors: the other major role players. These centers of knowledge must look outward and develop the language they need to thrust their communications forward.

To come into the world, a new language of development must be aware of its roots. All civilizations call for a blending of knowledge with wisdom organized into a creative flowering. In Rome, *scientia cum sapientia*; in classical Greece, *techne* was married to *sophon* under the aegis of *poiesis*: words which themselves stemmed from deeper and older roots.

If *techne* is only 'scientific' technology, and *sophon* the information slogans which sustain it, we become prey to the modern curse of unguided, uncontrolled growth, as in a cancer.

What knowledge must we seek, and where? What kind and how much is needed to ease the gradient of development in culture-safe steps? How much should be put in 'black boxes', how much is right for hands-on learning? And how to explain and communicate the rich meeting ground of the modern and the ancient: in which language should the harvest of sustainable development be expressed?

Human-scale technologies capable of conveying meaning and perception are not easy to come by. Our artisans, the modern Shilpis, must be seen as national treasures because in their art, wisdom is built into knowledge patterns and the alliance of these patterns guided by the organizing principle of creativity, the *poiesis* of our classical masters.

No longer can we afford to fumble, to sink into fruitless but face-saving trial and error activities. We must pass on what we learn of sustainable development. Let our cortical endowment exact its just rewards in sensitive decisions

rather than sensate rewards, wise rather than smart.

Mankind's new covenant for its swarm will be hard to strike: there are so many of us and our cultures are so diverse. If we can't achieve harmony within the family precincts, why should we be more efficient outside, in the wider world? Where will we learn, fumblingly at first, to shift from an unhealthy and sometimes perverse reliance on materials and energy to a deeper concern for all other life forms and a matching concern for the imperatives of time. Time horizons, seasons of nature and in human affairs, moments to be captured and opportunities seized. Materials and energy must be used economically, frugally, the savings to be invested in preserving all life forms and in 'buying us' the time necessary to recover a sustainable balance.

New patterns of information, of transformation, of the structures to hold and to contain them, all such will be needed; they are now needed, urgently.

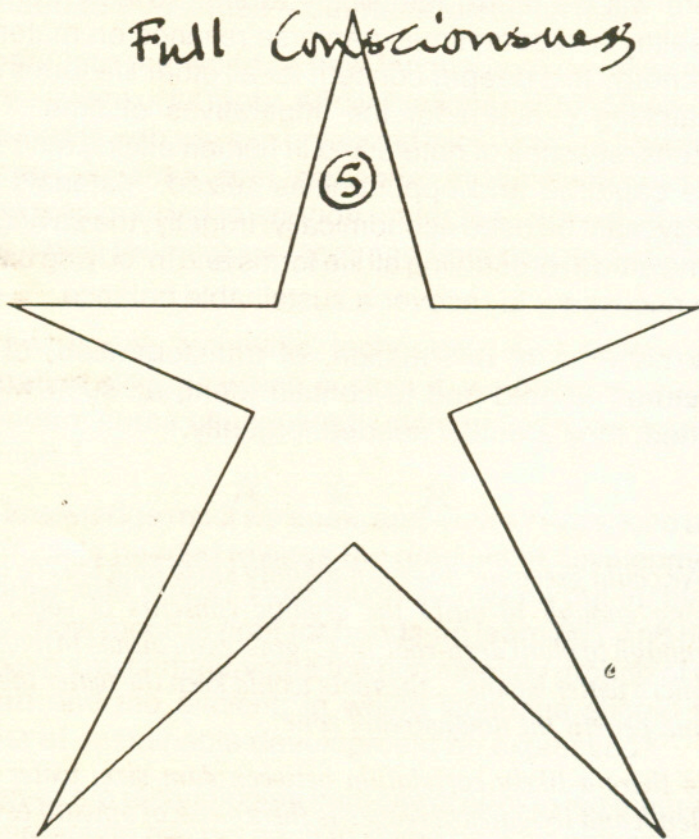


*We could green the deserts if we only knew how to keep water long enough to build the organic contents of soils; long enough to plant deep-rooting C<sub>4</sub> grasses on bunds to mark our micro water basins ... the roots would keep the water table up and benefit the downstream zone.*

*Is there a likely correlation between dam size, water table depth and irrigated acreage? Is there a risk of upward osmotic rise of undesirable salt from the subsoils? There is much knowledge to seek, and the answers would make all the difference, not in books and theses, but in the field, nudging Nature to a higher local yield, being sure not to affect neighboring regions adversely.*



Governance  
The ultimate quest  
Full consciousness

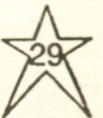




All systems strive for dynamic balance and for creative tension, inside and outside. *DA* could not aspire to any heights without keeping an eye on its multi-tasking headings and on the weather vane. Options are kept open as new ones keep being generated, but ultimately the selection is nudged into the right slot, or so we hope, because there is a right long-term course.

The eradication of poverty and of the impoverishment of our ecosystems is, at the same time, a real issue and a metaphorical quest. The humanization of our institutions and the sacralization of the human venture are essential to fulfillment of the vision. But the *raison d'être* is only an empty slogan if it is not supported by a sense of efficiency, of equity, of efficacy in action, of strength from within. No statutes will ever replace self-governance, for the individual and for society.

Tensions in a healthy system are resolved by constant shifts and adjustments, not by structural catastrophes. Adjustments made at the right moment, in the right amount, at the right place. The flexibility a system needs is found in its capacity to occupy a number of niches, which may serve as havens in turn. Adversary, military-type positioning in terms of right or wrong in command, control and communications is no longer a useful parallel, if it ever was, for a civil society. Advocacy that promotes the harmony of opposites is a better option than the one-answer, gladiatorial and self-complacent democratic systems in vogue today. The world of tomorrow is likely to shift towards female attributes, finding stability through adaptability, flexibility, resilience.





*Can we hold water in a fertilizer-soaked cardboard flowerpot from which the seedling could break free? ... Which bacteria would help in the exchange of mineral bases with the alluvial sediments or in breaking down shale and rock? Which old land records would tell us which vegetal or animal species was alive there in times gone by? How do we marry this information into an efficient soil support system? Where can we get the efficient gelatin polymers to hold the water in some suspension—polysaccharides of some sort? A modern Jal Shakti?*

*How close together should we plant the pots so that their healthy root networks could weave into a living web, in time for the monsoon to celebrate the full orchestration of life ...*

