

# *Science and Advaita Enquiry*

Calculation and Education  
in  
Different Kinds  
of  
Scientific Discipline

## *What makes a science 'scientific'?*

- Science starts by questioning beliefs that have been taken for granted. These beliefs are built into our views of the world, which is pictured through our senses and our minds.
- The problem is that our beliefs may be mistaken. When this is so, our knowledge gets confused; and then we see appearances that are not rightly understood.
- This problem is described by the ancient Greek word 'doxa'. It implies 'belief, opinion, appearance'. In Plato's *Republic*, four stages of learning are described by the ancient Greek philosopher Socrates, in his simile of the 'divided line'.
- These four stages can be illustrated by drawing a diagram, as shown in the next slide.

## *Stages of learning – Socrates' simile of the divided line*

<i>Episteme</i> (knowing, understanding)	<i>Noesis</i>	–	Clarifying reason, dialectic argument, philosophy	Investigating beyond assumed beliefs
	<i>Dianoia</i>	–	Formalized science, mathematics	Assumptions made explicit & systematic
<i>Doxa</i> (belief, opinion, appearance)	<i>Pistis</i>	–	Common sense, habitual faith	Sober and customary
	<i>Eikasia</i>	–	Illusion, imagination, myth	Deceptive or metaphorical

# TEACHING AND DISCIPLINE

Greek 'doxa' – belief, opinion, appearance

Latin 'docere' – to teach

(negative)

(positive)

doctrine – a system of  
taught beliefs

doctor – one who is  
qualified to teach

dogma – teaching by  
assertion of beliefs

document – a recorded  
teaching

dogmatic – assertion  
without enquiry

docile – ready to be  
trained and taught

orthodox – accepting  
prescribed beliefs

disciple – one who is committed  
to be trained and taught

heterodox – rejecting  
prescribed beliefs

discipline – rigorous system  
of training

## *Objective and subjective*

- In Sanskrit, the word for ‘objective’ is ‘*bhautika*’. It comes from the verb ‘*bhu*’, which means to ‘become’.



- The English word ‘worldly’ is in Sanskrit ‘*laukika*’. It comes from ‘*lok*’ meaning to ‘perceive’ and ‘*loka*’ meaning ‘region’ or ‘world’.



- The words ‘objective’ and ‘*laukika*’ are thus related to becoming and change.

- The Sanskrit word for ‘subjective’ is ‘*ātmīya*’. It comes from the word ‘*ātman*’, which means ‘knowing subject’ or ‘inmost self’.



- The same word ‘*ātmīya*’ means ‘spiritual’ as well. It too derives from the word ‘*ātman*’, which implies an unchanged clarity of purely knowing self.



- The word ‘subjective’ is thus related to an unchanging self that knows all show of change.

## *Objective detachment?*

- In order to see things objectively, an observer must be detached from all partial and changing views that are produced by a variety of personal and cultural faculties.
- These faculties have to be understood as objective instruments, which are a part of the observed world.
- All instruments and what they show must be interpreted from a disinterested standpoint: which stays completely uninvolved, with any partial object or instrument or faculty or viewpoint in the world.
- Accordingly, a true objectivity can only be achieved by standing back, from the outward world that is observed through our partial personalities.
- That requires a disinterested observer, who can see and interpret and distinguish things impartially.
- Such a disinterested observation must be made from an independent standpoint: which is free from all prejudice and from all partialities of personality and culture and world.

## *How can a science be 'objective'?*

- Somewhat paradoxically, for a science to be more truly *objective*, its scientists have to reflect *subjectively*, into the depth of their own minds.
- They have to reflect more deeply back in, beneath the partiality and prejudice of our bodily and mental faculties.
- For such a reflection to achieve its purpose, an impersonal depth of inner knowing must be found, beneath the outward biases and limitations of our changeable and driven personalities.
- By thus reflecting *subjectively*, each scientist must somehow fall more deeply back upon some ground of knowing that is shared in common.
- Without such a shared ground of knowing, beneath our differing perceptions and ideas, we would not be able to communicate.
- That common ground is essential for us to agree on any general principles – which enable us to describe so many particular objects and events, in such a differentiated world.

## *Appearance and reality*

- A particular object (or a '*visheṣha*') is one of many differing instances which show some generic principle (or some '*tattva*') that is shared in common.
- Each person (or '*puruṣha*') is derived from a common principle of human-ness, which is itself impersonal.
- The Sanskrit word '*vicāra*' means 'enquiry'. It specifically implies a testing through reasoned investigation, which tells truth from falsity.
- Seeing (or '*darshana*') is a partial perception of differing objects. Knowing (or '*jnyāna*') is an impartial realization of underlying truth.
- Apparent form – called '*rūpa*' – is a superficial view, seen from the outside.
- The true nature of reality is called '*svarūpa*'. The prefix '*sva-*' means 'one's own'. It is just that which one finds directly, without any intervening perception. It's that which must be experienced as one's own identity: at the unmediated depth of purely knowing self, within.

## *Western and Indian developments*

- Why did modern sciences develop so spectacularly, in the West? Why not in India and in other ancient civilizations, where mathematics and some industrial technologies had been developing for rather longer and often with more sophistication than in the West?
- In the development of Western science, there were of course many contributing factors. But two of them can be considered in particular. First, a Western emphasis on the *written word and external documents*. And second, a related emphasis on *organized institutions* that make use of such documentation in external media.
- Both in the West and India, we can consider four main periods: ancient, classical, medieval and modern. These periods correspond to similar stages of civilization, but the times at which they occur are different.
- These four periods are illustrated in the next few slides.

# *How did sciences develop, in ancient times?*

## **In the West**

*Up to 500 BCE*

- No tradition of chanted texts survives, with the recited accuracy of the Vedas.
- Monumental civilizations of Iraq and Egypt, continuing into the classical period.
- Extensive written records in stone inscriptions, clay tablets and papyrus stones.
- Dates relatively well established, through laboratory analysis of written records and archeological remains.

## **In India**

*Up to 500 BCE or perhaps much earlier*

- Vedic tradition of chanted texts transmitted accurately by oral chanting, from how far back is very uncertain.
- Non-monumental Indus civilization, with cities and towns declining after 2000 BCE.
- Technological sophistication as in Iraq and Egypt, but written records so brief that they cannot even be deciphered yet.
- Major uncertainties of dating early classic texts that mark the end of the ancient period.

# *How did sciences develop, in classical times?*

## **In the West**

*500 BCE to 450 CE*

- Hebrew, Greek and Roman classics were written and preserved in libraries. Teaching got organized through academies.
- Authority was centralized, under the Roman empire.
- The corruption and fall of Rome resulted in a major break of classical tradition.

## **In India**

*From before 500 BCE to 900 CE*

- Sanskrit and Tamil classics were composed and taught through recitation. Teaching followed the '*guru-kula*' ideal of individual transmission.
- Authority remained decentralized, in many different kingdoms and localities.
- Despite invasions that destroyed many kingdoms and cities, classical learning passed on decentralized into the medieval and modern periods.

# *How did sciences develop, in medieval times?*

## **In the West**

*450 CE to 1500 CE*

- The Christian faith was spread and organized by the Roman Catholic church, which thus established a centralized authority over faith and learning in the European middle ages.

## **In India**

*900 CE to 1850 CE*

- The *bhakti* movement brought faith into prominence. It thus developed many regional and vernacular traditions, which combined classic learning and more popular folk culture.

# *How have sciences developed, in modern times?*

## **In the West**

*1500 CE to the present*

- Printing and Renaissance humanism worked towards a scientific and industrial revolution, which has spread school and university education, thus encouraging liberal attitudes of free thought and self-reliant individuality.

## **In India**

*1850 CE to the present*

- The use of printing and new media have enabled classic and vernacular learning to be taught in modern schools and universities, along with new science from the West.
- The challenge now is to interpret the old sciences in a modern way, as living disciplines whose reasoning enquires back into an impersonal depth of subjective experience.

## TWO MODELS OF SCIENTIFIC DISCIPLINE

### **Mechanical physics**

### **Linguistics**

Primary  
and direct  
use

To *calculate* predictions  
and achieve objective  
results

To *educate* living  
faculties of expression  
and understanding

Secondary  
and auxil-  
iary use

To *educate* intuitions that  
inspire successful theories  
and their useful application

To formulate rules  
for *calculating* correct  
word forms and use

Meaning  
of words  
and  
symbols

Defined considerably  
through artificially agreed  
convention, like names  
being used as mere labels  
to identify places on a map

Based essentially on  
nature and history,  
like words that evoke  
a meaning through  
their shape of sound

## *Modern physics*

- Studies an external world that *excludes* our minds.
- Describes the world, through quantitative theories that are used to *calculate* results.
- *Mechanically* tested and applied, through instruments and machines that are specified by engineering standards.
- External standards, developed and maintained by organized *institutions* in society.

## *Old sciences*

- Investigate a *living nature* that *includes* both world and mind.
- Conceive of nature's life, using qualitative theories that *educate* our living faculties.
- *Organically* tested and applied, through educated faculties that have been clarified by a reflective questioning.
- Inner standards are attained by an *individual* reflection back, to a shared ground of knowing.

# Energy – seen driven or felt inwardly inspired?

*Seen externally, through mechanical instruments*

Energy acts mechanically, from one object to another.

Each object is thus acted upon, by forces and constraints that are imposed from the outside.

Life is treated as a special kind of behaviour, which is shown by our bodies in the world.

This behaviour is described by simulating it, mechanically.

Seen thus externally, life is assumed and interpreted, in bodies that are similar to ours.

*Found by reflective questioning, into our living faculties*

As nature functions, a living energy arises from within.

That energy is inwardly inspired, by the unaffected knowing of pure consciousness.

Life is approached as the natural expression of an inmost knowing, from where all acts are lit.

Reflecting back to consciousness, all that is seen expresses it.

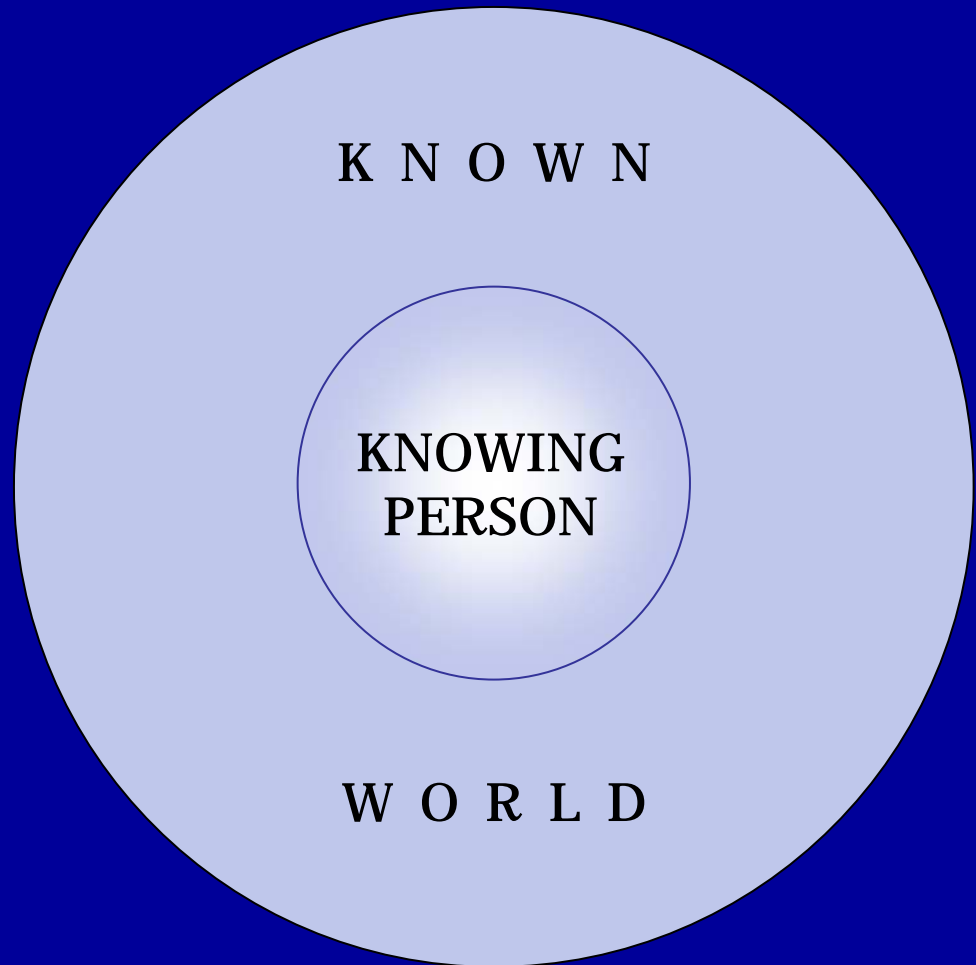
Found thus reflectively, by questioning back in, all nature is experienced as alive.

# PERSONALITY AND WORLD

We each of us identify ourselves as knowing persons, surrounded by a known world.

Each person thus appears, as a knowing island of perceiving life.

And that life expresses knowledge – in our actions, thoughts and feelings towards objects in the world.



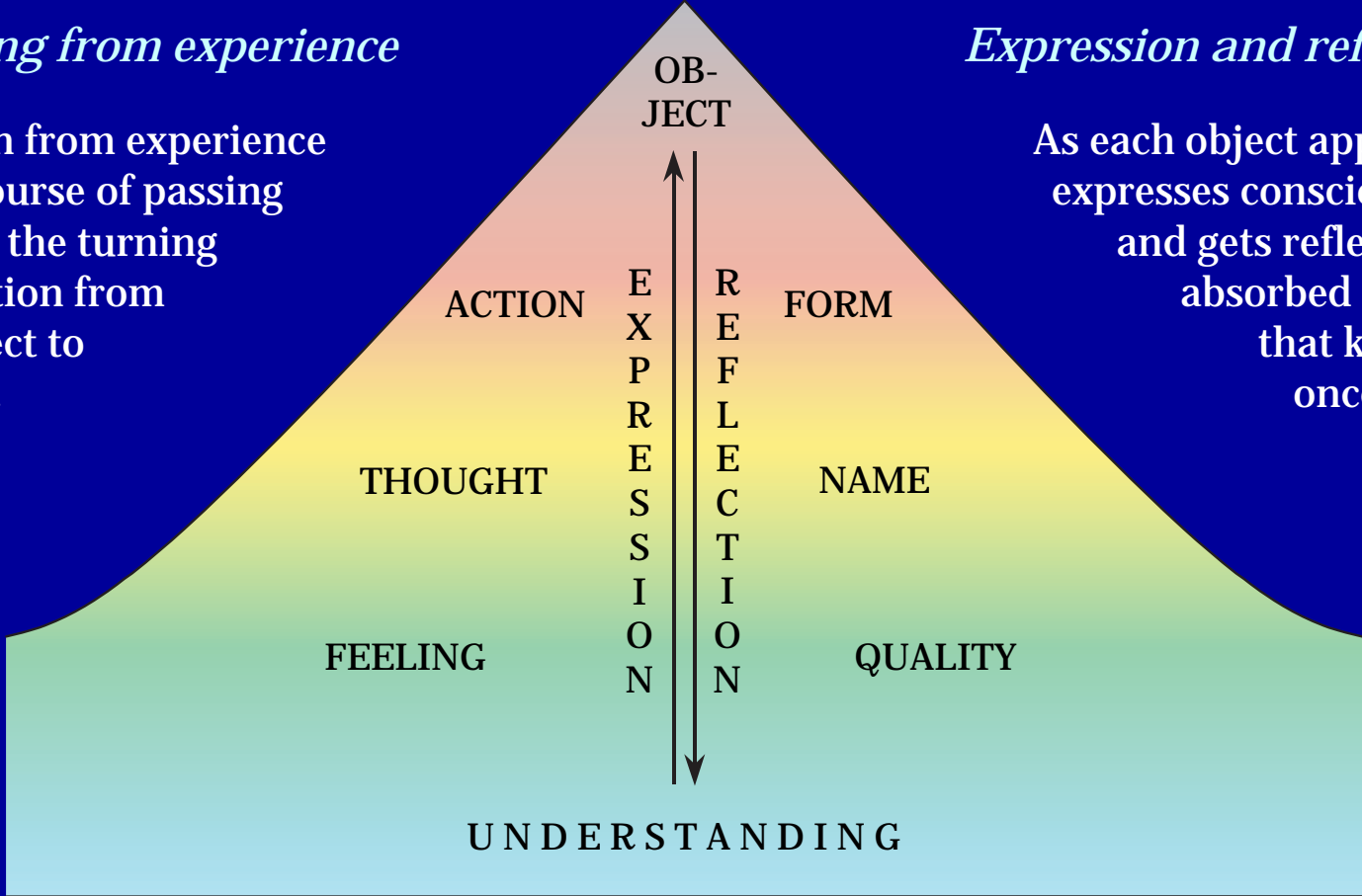
FOCUS OF ATTENTION

*Learning from experience*

We learn from experience in the course of passing time, by the turning of attention from one object to another.

*Expression and reflection*

As each object appears, it expresses consciousness and gets reflected in, absorbed back by that knowing once again.



C O N S C I O U S N E S S

## THE OLD 'FIVE ELEMENTS'

<i>Traditional element</i>	<i>Level of appearance</i>	<i>Examining instrument</i>	<i>Scientific disciplines</i>
'Earth'	Pieces of matter	External body	Mechanical physics
'Water'	Transforming energy	Organic faculties	Biological sciences
'Fire'	Meaningful information	Conceiving intellect	Culture studies and humanities
'Air'	Conditioned character	Intuitive judgement	Psychology and meditation
'Ether'	Continuing existence	Reflective reason	Philosophical questioning

Unchanging ground of reality and consciousness

## SPACE, TIME AND CAUSE

<i>Body</i>	Space	Co-existing points	World of objects	Elaborated structure, perceived by body
<i>Mind</i>	Time	Replacing moments	Succession of states	Mediating process, conceived by mind
<i>Consciousness</i>	Causality	Continued consequence	Assimilating capability	Silent seeing, at the depth of insight

Knowing in identity