Scientific Disciplines

Newtonian mechanics

The foundations of modern mechanics have been established largely by two individuals: Isaac Newton and Albert Einstein.

Newton described a world of material objects, distributed in three-dimensional space. In this description, objects are related through forces of action and reaction that they exert upon each other. Here, Newton's laws describe how objects move through space, accelerated by their interacting forces. Thus, smaller objects are related together into larger structures, whose movement and change may be predicted in the course of time.

This Newtonian description is fine when two objects are observed to come into contact with each other – as when a billiard ball is hit by a cue-stick, and is thus impelled to strike against another billiard ball. But Newton acknowledged a serious problem with forces like gravity and electromagnetism – as they appear to be transmitted mysteriously, by a discontinuous jump across an intervening gap of empty space.

Here, Newton recognized that his material description was inadequate. In particular, it did not give any satisfactory account of what happens in between two separated objects, so that force may be transmitted from one to the other. In the absence of such an account, he rather guessed at an inverse square law.

This guess comes out of an intuitive assumption that force is radiated outward somewhat like a material flow, whose intensity must get reduced in proportion to its expanding surface of dispersal. Such an intuition is a little confused; because we are describing empty space, in which no flow of matter is observed. We are talking here of an immaterial transmission of material force, which is a bit self-contradictory.

Despite this conceptual problem, the inverse square law has turned out to be remarkably accurate, in describing the elliptical motion of planets round the sun. Newton noted the success of the calculations, but insisted that there was something basically wrong with the conception. He said (in his *Letters to Bentley*) that 'the cause of gravity is what I do not pretend to know, and therefore would take more time to consider it.' On this question, his position was: 'Hypothesis non fingo.' ('I make no hypothesis.')

After Newton, Faraday and Maxwell developed the theory of electromagnetism into what is called a 'field description', where each point of space is conditioned by a mathematically specified value. Here, the conditioning of space was described to

exert a force on the objects that are located in it. But the conditioning was still materially conceived. It was attributed to a material substance called the 'ether', which was said to pervade all space and thus to enable the passage of light and other electromagnetic waves through it.

Relative observations

Einstein's great contribution was to see that the 'ether' was not a material substance, added from *outside* into space and time. Instead, it is an immaterial continuity which carries on essentially *within* all space and time, throughout all differing places and all changing moments. Einstein saw that all space and time are relative measurements, which differ from one observer to another. From each observer's point of view, space and time are measured from an unmoving frame of reference, while other observers carry their various frames of reference along with them.

But all observers see the same continuity of space and time through which light travels, carrying information from one place and time to another. That continuity is shared in common by all observers, as they travel differently through it and as they exchange information with one another.

In Einstein's theory of relativity, that common continuity is called the 'space-time continuum'. And the travelling of light is an essential principle, throughout the entire continuum. That travelling of light is what essentially connects the different parts of the continuum and its differently moving observers. The paths on which light travels and the speed of light are thus fundamental to the continuum. They must be the same for all observers, no matter how these observers move in relation to each other.

Through this line of reasoning, Einstein took the speed of light to be an invariant principle: found everywhere the same, by all observers. This was the basis of his special theory of relativity, which showed that not only space and time but also matter and energy are relative measurements. Moreover, it was shown that matter and energy are not quite as different as they seem. They are more accurately differing perspectives, from which an object may be described.

As shown by the equations of special relativity, when an object moves, its mass is increased a little bit, by the added energy of movement. Einstein interpreted this to show that mass is a condensed form of energy. At first, it seems that an object's mass of inertial matter is quite different from its energy of moving activity. But it turns out that the difference is one of perspective only. The same object may be viewed alternatively: on the one hand as a piece of structured matter, and on the other as an energetic system of dynamic activity.

Quantum uncertainty

Considering these alternative perspectives, Einstein reasoned that just as matter is described to be made of particles like electrons, so also energy may be described as made up of small steps through which a dynamic system may increase or lower its activity. Such steps had been called 'quanta' by Max Planck, in analysing the black-body radiation of light waves from a heated cavity.

Einstein used Planck's analysis to ask how light waves in general could be described as emitted and absorbed in these 'quantum' steps of energy. By following this line of thought, Einstein came up with a strangely mixed and prevaricating description. Where light is emitted or absorbed, it behaves as though it were made of material particles, with a mass and a momentum that are determined by the electromag-

netic frequency and wavelength. But, in between the emission and absorption, light travels through space as though it were a wave-motion in the electromagnetic field.

This is a hybrid description that mixes up two different perspectives, the material and the energetic, without a proper resolution of their conflicting difference. Thus, Einstein and other physicists regarded it as merely provisional, on the way to some better description that must replace it.

Despite its conceptual difficulties, the hybrid description was rather successful in describing the photoelectric effect, where light knocks electrons out of the surface of a metal and thus creates a small electric current. This led to the development of quantum theory, which shows us that Newton's material mechanics fails and ceases to apply at very small scales of size.

In trying to describe the world at small scales of size, modern physics has developed mechanical instruments like microscopes, which help us to observe what happens in smaller spaces and shorter times than our unaided senses can detect. As modern physics looks down into smaller and smaller scales of size, it shows us that matter is made up of tiny molecules, which account for a variety of solid and liquid and gaseous states of matter that our senses perceive.

On further investigation, these molecules are shown to be made of even smaller parts, called 'atoms'. Moreover, by describing how atoms are combined into molecules, we get an effective account of chemical substances, which react upon each other so as to form the solids and liquids and gases that show up in the material world.

But as we come down to the scale of atoms, and as we try to look at even tinier scales inside them, the mechanical approach of modern physics has come up against a rather tricky problem, which is prominently described in quantum mechanics. Here, it turns out that our mechanical instruments are jerky and uncertain in their measurements, to a substantial degree that we can't properly control.

The more accurately we measure space, the less accurately we can measure speed and momentum. The more accurately we measure time, the less accurately we can measure energy and mass. As a result, in the theory of quantum fields, modern physicists have to concede that what seems to be empty space is not empty at all, when described more accurately. It is filled with huge fluctuations of momentum and energy; and the fluctuations get unlimitedly huge, as we consider smaller and smaller spaces or shorter and shorter times.

The world is thus shown to be more and more complex, unlimitedly so, at smaller and smaller scales of space and time. And our mechanical measurements are shown to be correspondingly uncertain and compromised. It is to manage this uncertainty that modern physicists have been forced to adopt a double standard of consideration.

On the one hand, the observing instruments are assumed to be fabricated mechanically, as material structures that have been made up from crude pieces of matter. These pieces of matter are inevitably crude and so too are the instruments we fabricate from them, because of their coarse and their incomplete perception through our limited and partial senses.

On the other hand, what's observed is considered in a far more subtle and sophisticated way, as a conditioned field. The field is described by attributing a mathematical value to each point-event of happening in space and time. What's thus considered is not just a material construction. It is not just a construction that has been made up

materially: from pieces of matter that we have so crudely perceived through our partial senses, and through their gross extension by mechanical instruments.

Instead, what's considered here – through this field description – is far subtler and far more essential, in a more deeply connected accounting of what is observed. What's here considered is a pervasive conditioning of the space-time continuum, taken as a whole.

From this perspective of a problematic double standard, what quantum mechanics shows is the result of a mismatch: between a subtle field conditioning and much cruder instruments through which that conditioning is mechanically observed. The mismatch must of course produce uncertain and jerky measurements; but quantum physics works by acknowledging and thus partly allowing for the uncertainty and jerkiness.

Through a repeated application of this partial allowance, quantum theory and its instruments have been progressively developed – so as to improve our mechanical technology, in its achievement of particular results. The improvements have been obviously successful, but their particular results must be paid for by an inevitable cost of using such mechanical technology.

The cost is unavoidable in this mechanical approach, because its particular results are achieved by specifying them more narrowly. As a variety of desired results are thus narrowed down objectively, they require diverging specializations that must somehow be co-ordinated, to make them work together in a shared environment.

And the co-ordination must then multiply complexity, in order to accommodate an ever-growing diversity of specified requirements. Both theory and technology get here mind-boggling and opaque, to the intuitive understanding of our living faculties. It thus turns out that something more is needed than a merely mechanical approach, which does no more than calculate results.

Space-time geometry

As quantum theory has developed, its most common interpretation is that nature prevents us from knowing things correctly, beyond an irreducible minimum of unpredictable uncertainty. But Einstein found this unacceptable. In his approach to science, it is quite wrong to lay the blame for our uncertainties on nature. This kind of blame results from our personal and cultural frustrations, as we keep finding that nature's functioning is essentially more subtle than we are able to describe, in our constructed pictures of the world. As Einstein put it himself: 'Nature hides her secret by her essential loftiness, not by a deceiving strategy.'[1]

In order to find better pictures of the world, Einstein looked for invariant principles which are found shared in common, beneath the variety of changing phenomena that are observed from differing perspectives. The special theory of relativity is founded on the invariant speed of light; but this special theory is restricted to observers whose motion is unaccelerated in relation to each other.

After this special theory, Einstein went on to consider what happens when the relative movements of observers are accelerated. And here he realized that through such

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[1] 'Die Natur verbirgt ihr Geheimnis durch die Erhabenheit ihres Wesens, aber nicht durch List.' (Quoted at the beginning of Abraham Pais, *Subtle is the Lord… – The Science and the Life of Albert Einstein*, Oxford University Press 1983.)

accelerating motions, various differing observers would experience forces that are exactly the same as gravity. Accordingly, the forces of acceleration and of gravity were shown to be differing appearances of the same invariant principle, which is mathematically described as a geometric curvature of the space-time continuum.

In this description of space-time, there is no longer a material mechanics where three-dimensional objects interact through force. Instead there is only an immaterial geometry, whose points are four-dimensional events. The point-events are connected into lines of travel, by a four-dimensional geometry that includes the usual three dimensions of co-existing space and a fourth dimension of passing time.

Thus, space and time are described as combined inextricably together, in a single geometric continuum which extends through all objects and events. As Einstein used this geometric description to explain the phenomenon of gravity, he saw again a fundamental principle. In the continuum itself, as Einstein conceived of it, there is no forced movement. As an object moves in a gravitational field, its path of travel is quite straight. Its path must always travel through the shortest line between its different point-events. The path of travel is thus always natural and unforced, in the underlying continuity of space and time.

But, because the space-time geometry is curved, lines that are straight in four dimensions may appear to be bent and twisted unnaturally, when they are viewed through a changing world of three-dimensional space. To understand this problem, it may help to think of travelling in a hilly terrain – whose geometry is curved and bumpy. The geometric bumpiness must complicate a traveller's perception of the shortest path from one place to another. This shortest path is a straight line of travel in the hilly geometry. But this straight path must seem to bend and twist somewhat unnaturally, to an undiscerning traveller.

In much the same way, where the space-time continuum is geometrically curved, it must appear that the motion of an object in the material world has been forced into changing its speed or its direction. This appearance of forced motion is a superficial show. It arises from a background continuity that is more fundamental. There, nature is connected geometrically, beneath all mechanisms that appear to work through interacting force.

Thus, Einstein sought to go beyond a material picture of the world, made up of objects that are driven by interacting force. And he did this by reflecting to a background continuity, where nature carries on unforced throughout all changing happenings. In his general theory of relativity, he described that continuity geometrically, as an immaterial space-time continuum where nature is found manifested in all differentiated objects and all changing events.

In this manifestation of continued nature, objects are perceived to appear, as pieces of matter that are differently located in the three dimensions of space. But this is a superficial and misleading perspective, seen through our partial and inaccurate senses of bodily perception. To be less partial and more accurate, both space and time must be conceived together, as an underlying continuum that subtly connects all different-seeming things. All seemingly material happenings are only differing and changing appearances, by which one single continuity of nature is made manifest throughout all space and time.

However, it must be admitted here that the theory of relativity has only had a limited and mixed success, in its attempts to explain the forces of nature. Its description of gravity has met with a partial success, in our macroscopic views of the universe at

large. But, despite considerable efforts, there has been no successful explanation as to how electromagnetism might be reduced to space-time geometry.

Electromagnetism is still best described by quantum field theory, as a force that is produced by huge fluctuations of momentum and energy in tiny neighbourhoods of space and time. These fluctuations are so minutely close and so blindingly rapid that our instruments cannot observe them directly. What we observe instead is an overall effect which can be detected: as various kinds of force that get to be exerted on the objects we observe.

In what seems to be empty space, the overall effect of quantum field fluctuations is zero. Here, the individual fluctuations cancel each other out, so that our coarse instruments don't show us anything. But where our instruments show objects moved by force, that is a coarsely averaged effect of these huge field fluctuations in extremely tiny neighbourhoods.

Similarly, through this quantum field conception, two other basic forces have been described, to account for the behaviour of matter and energy at sub-atomic and sub-nuclear scales of size. These two forces are called 'weak' and 'strong'. The 'weak' force accounts for radioactivity, through the disintegration of neutrons and many other particles. The 'strong' force accounts for the formation of a great variety of particles, through the binding together of more fundamental particles called 'quarks'.

As things stand at present, there is an unresolved opposition, between the differing approaches of quantum mechanics and the theory of relativity:

- In quantum mechanics, there is a predominant insistence on discontinuity and uncertainty. Here, it is claimed that nature forces us to observe things with a minimum of jerkiness and fuzziness that we can never go beyond.
- In the theory of relativity, the emphasis is basically on continuity and certainty. The space-time continuum is inherently continuous and fully determined. All differing parts of space and all changing periods of time are contained in it; so when it is considered as a whole, it must exist 'all at once', beyond all missing gaps and confusing doubts that may appear through our partial and uncertain observations. Wherever we perceive any discontinuity or uncertainty, these qualities don't properly belong to the continuum itself. They must be more superficial and compromised appearances, which have been superimposed by imperfect observation.

Thus, modern physics is in something of a quandary. It has made some extraordinary progress in two different kinds of description that are basically opposed.

On the one hand, a quantum description sets final limits that are forced by nature on the continuity and certainty of our observations. It says that our measurements can only go so far and no further, in reducing the discontinuous and uncertain gaps that we find in our pictures of the world. But on the other hand, a relativistic description shows a continuum that has no gaps nor any force, but only turns and twists in it.

The quantum approach accordingly sees nature as inherently compromised by force and disruption; while the approach of relativity sees nature as essentially uncompromised, beneath its compromised appearances through our imperfect observations and understanding.

The opposition here is fundamental. It shows two opposing directions of scientific enquiry:

- On the one hand, as quantum mechanics has developed, its direction is insistently *objective*. Its main concern is to calculate predictions, through objective pictures

that are tested and applied through the mechanical instruments of an objective technology.

- But on the other hand, in Einstein's theory of relativity, the direction is more basically *subjective*. For Einstein's overwhelming concern was to reflect back into the depth of mind, in search of invariant principles that underlie the varying phenomena of nature.

A great majority of modern physicists are inclined towards the objective approach of quantum mechanics, which has proved very effective in an extensive development of mechanical and industrial technology. And a somewhat bemused objection is often raised against both Einstein and Newton – for their intensive emphasis upon subjective and spiritual reflection, in exploring the foundations of scientific enquiry.

The objection comes from a habitual assumption, that a subjective reflection is just *personal*. If this assumption is accepted, then it must necessarily discount the value of a subjective approach to science. For science seeks a knowledge that cannot be confined to any of our partial personalities. A scientific knowledge must be true *impersonally* – beneath our many personal differences, which make us do and see and think and feel things differently.

Organic sciences

But is it right to assume that a subjective reflection is just personal? As we reflect into our minds, is there nothing to be found but personal perceptions, thoughts and feelings that differ from one person to another? Or is there anything in mind that is found shared in common – beneath the differing appearances that keep replacing one another, in the course of our changing mental states?

These questions are themselves inherently reflective. They have to be asked reflectively, through an investigation which turns back from the outward surface of appearance to an inward depth of mind. That is a very old investigation – from which a variety of different sciences have long been developed, in many cultures and traditions.

Those sciences are not just mechanical. They do not restrict their consideration to a structured world whose objects act upon each other, like the parts of a machine. Some sciences proceed from the mechanical to the organic. They include in their consideration our organic faculties of sense and mind – thus leading to a deeper perspective and a broader field of study. The perspective is thus deepened, by a reflective examination of our sensual and mental activities. And the field of consideration is thereby expanded, to an organic nature which includes all actions in both world and personality.

That nature is not just a structured world, made up outside our minds. No outside world can show itself to us. In order to describe how this world appears, we need an additional consideration of its perception and conception in our minds. The idea of a structured world is thus inevitably partial and inadequate. It cannot fully account for our experience.

For a fuller accounting, we have to include our sensual and mental activities in the idea of nature. We have to think of nature as a complete realm of all changing activity, including all objective interaction in the outside world and all living process of perceiving or conceiving personality. Thus including sense and mind, nature is self-

manifesting. It shows itself to everyone, through a succession of appearances that it produces in every person's mind.

In this idea of nature, a careful distinction is made, between doing and knowing:

- On the one hand, a *doing* is a changing act, producing some perceived or thought or felt result in the appearances that nature shows.
- But on the other hand, as nature's appearances get changed, they must be illuminated by a *knowing* that stays present through their coming and their going.

Where nature is conceived mechanically, as an external world, we take it for granted that our observing and interpreting amounts to a knowledge of this world. But, if that assumption is examined further, it turns out to be confused. All our observations and interpretations are just changing acts, in a process that attempts to observe and to interpret better.

These changing acts belong to the realm of nature. So do our sensual and our mental processes. They each evolve through a succession of perceiving and conceiving states. As any such succession is observed, it must be known by a consciousness that carries on, beneath all change of states which may evolve for the better or the worse.

By reflecting to that underlying consciousness, nature's functioning may be conceived organically, as expressing living purposes and meanings and values through the process of experience in our lives. The energy of that expression is subjective, in its origin. It does not act from any kind of object, but only from that consciousness which is the knowing subject of each person's experience.

In this organic description, the energy of nature is essentially alive. It rises up from underlying consciousness, which it expresses objectively. That consciousness is utterly detached and unaffected, remaining always uninvolved in any changing acts. Its knowing is an actionless illumination, beneath the living energy of nature's ordered functioning.

That living energy is what makes nature natural. It is not driven artificially, by any force exerted from outside. Its action is spontaneous, arising of its own accord, as it is found inspired by the presence of that consciousness which knows it from within. From there, all nature manifests its changing appearances that show up in the world and in our personalities.

To understand this organic approach, it may help a little to compare it with quantum mechanics. An organic approach is essentially systemic. What it describes are systems of activity, instead of interacting objects that make up a material world. The same is true in quantum mechanics, whose quanta are described as incremental steps through which the energy and momentum of a dynamic system may be raised or lowered.

But quantum mechanics is not biological. Its dynamic systems are mechanically described and observed, through calculated numbers and material instruments that are mechanically specified. In this quantum approach, the observations are found to be compromised, by logically incoherent and confusing gaps of discontinuity and uncertainty. The difficulties that result are managed by some complicated calculations of probability, in what may be predicted to occur.

By contrast, an organic approach is essentially biological. Its systems of activity are biologically observed and described, through living faculties that are inspired to express an underlying consciousness. In this organic approach, our observing and

describing faculties are microcosmic systems of a living energy that is found everywhere, throughout the macrocosmic universe.

Our microcosmic personalities are thus conceived to share a living environment, in which they are macrocosmically contained. And an organic science is conceived to work through a living evolution of our microcosmic faculties, as they co-ordinate together in the macrocosm of their shared environment.

In order to improve our observations and descriptions, we need to harmonize our personalities, so as to achieve a better co-ordination in their correspondence with the world. Here, personality and world are each conceived as organic systems, which must develop mutually. This is the basic method of organic sciences, which are applied through their cultivation of our living faculties.

Such an organic approach has long been used in many ancient disciplines: like those of agriculture, farming, commerce, management, administration, warfare, medicine, ritual, astrology and alchemy. Moreover, these old disciplines have long been described as ‘sciences’. But in describing them as such, it needs to be clarified what’s meant by the word ‘science’.

In recent times, this word has developed a specially restricted use, to consider the mechanical sciences in particular. Considered thus, a scientific theory must be tested and applied mechanically, through predictions and prescriptions that must be observed and implemented by mechanical instruments. Such a restricted consideration does not include the old organic disciplines. In order to describe them as ‘sciences’, we have to fall back upon an older and a more essential conception of what is meant by the word ‘science’.

That old conception is clearly shown by the Latin word ‘scientia’, which simply means ‘knowledge’. And it is even more clearly shown in Sanskrit, where a science is described as a ‘vidyā’ or a ‘shāstra’. The Sanskrit ‘vidyā’ is derived from the verb ‘vid’, which simply means to ‘know’. And the Sanskrit ‘shāstra’ is derived from the verb ‘shās’, which implies a correction of mistakes.

As shown by these Latin and Sanskrit words, a ‘science’ is a correcting discipline, which uses reason to ask for truer knowledge. That is how the word ‘science’ has long been used and is still commonly used today, to describe a variety of disciplines that include both objective observation of an outside world and subjective reflection into deeper knowing.

Where science is considered thus, to include a reflective enquiry, this inclusion opens up a radically biological perspective. That perspective has been skilfully avoided, in some recent conceptions that have extended our mechanical sciences into biology and medicine.

In particular, biologists have usefully described the distribution of living species through evolutionary theories of natural selection. And medical science has extensively developed its mechanical and chemical descriptions of our living bodies, along with a corresponding ability to intervene mechanically and chemically in our bodily functioning.

As mechanics has thus been extended into biology, our mechanical descriptions and technologies have been applied to living bodies, at smaller and smaller scales of size. As the scales go down to the level of complex molecules, we have developed a molecular biology, which has been very useful in accounting for the genetic inheritance and the intricate chemistry of our structured bodies and their complex functioning.

But these bodily descriptions are not radically biological. They are explicitly rooted in a mechanical conception of objective structure. Accordingly, they treat biology as an extension of mechanics, through emerging levels of complexity. The complexity builds up internally, within the structure of those bodies that we take to be alive. And it builds up externally, as interacting bodies form larger structures in the environment.

In this complexity of structure, just how we take some bodies as alive is left implicit. It's left implicit that our recognition of life is essentially reflective. To recognize a body as alive, it cannot be enough that the body is found complex. A body is found living only when its behaviour is understood reflectively, as expressing some sense of purpose or meaning or value that is shared in common by the observer and the observed.

Such a reflective understanding is implicit in medicine and health care, as doctors and nurses treat their patients. And it is likewise implicit in a biologist's examination of living creatures or their environments. Thus, in modern medicine and biology, there is a somewhat prevaricating compromise. As things stand at present, these disciplines are explicitly mechanical, at their conceptual foundations. But in their actual practice and investigation, they are implicitly organic.

In older sciences, the organic approach is less compromised. Life is explicitly defined as nature's expression of an underlying consciousness, in microcosmic personality and macrocosmic world. Old sciences of medicine thus consider health as a dynamic equilibrium, in the co-ordination of our bodily and sensual and mental functioning. A healthy functioning is one that maintains a harmonious balance, between disturbing tendencies towards imbalance and corruption.

In India, Āyurvedic medicine describes disease as an imbalance of three 'doshas' or 'faults'. Each is a fault when aggravated excessively. And health is sought by restoring their natural balance in a patient's constitution. In European medicine, there is a similar conception of four 'humours'. Quite like the Āyurvedic doshas, the European humours are described as differently emphasized in our natural differences of personal constitution. And these same humours are similarly taken to be shown imbalanced, when manifested in disease.

As conceived in ancient disciplines of ritual practice, the entire universe is animated biologically. Here, it is not objects that give rise to movement. Instead, it is the other way around. Each object is considered as a crude appearance of more subtle energy that is essentially alive. In Sanskrit, the universe is simply called 'jagat' or 'moving'. It's thus described to be made up of animated movement, which inherently expresses consciousness.

That animated universe can't be described as a mere structure, made up of objects or events. It is conceived more adequately as a living cosmos, with a generic mind. Our microcosmic personalities take part in that living cosmos, which they observe and describe from their different points of view. Because of these differing perspectives, our representations of the cosmos are quite different. But its generic mind is shared in common by us all, at that underlying depth of knowing which stays present through the changes of appearance.

In this conception, it is acknowledged that our bodies and minds are limited at the surface of particular attention. But it is also considered that each limited person has an inward access to the whole generic mind and to its unlimited potential, which is expressed in all happenings throughout the universe.

This is the reasoning behind old ritual practices. They are taken to evoke subtle powers from an inner depth of mind that is shared in common, by each of our microcosms and by the macrocosm as a whole. In a ritual act, the shape and quality of action is conceived to produce a particular effect – through an awakened flow of subtle energy that is drawn up, into the living faculties of a ritual practitioner.

That awakened flow is described in the science of 'prāṇāyāma' or 'living energy control'. Here, a human body is conceived as manifesting an organic system of energy currents. The system is centred upon a vertical axis, which rises through the spine and goes up to the top of the head.

Along the axis, there are nodes called 'cakras' or 'centres', where branching currents originate. The bottom-most node is the 'mūlādhāra cakra' or the 'root support centre'. Here, it is conceived that an infinite energy lies usually dormant, like a coiled up serpent in a covered hole. That energy is called 'kuṇḍalinī' or 'coiled'. From it arise three channels that proceed up the vertical axis, to feed the cakras or the nodal centres above.

Two of the channels are limited, as they produce the limited life and activities of a particular body in the world. One of these channels is called 'pingalā' or 'tawny'. It carries an *e*ffective energy that drives the body's movements in the world. The other channel is called 'iḍā' or 'refreshing'. It carries an *a*ffective energy that enables sensation and perception.

Between these two limited channels, a central channel is conceived to be unlimited. It is called 'suṣhumṇā' or 'gracious'. It is a channel of spiritual grace, with an unlimited capacity to carry the infinite energy called 'kuṇḍalinī'. In most people, that infinite energy is very little used. Almost all of it stays dormant – as its central channel is blocked off, by the disharmony and dissipation that makes energy seem limited, in our habituated bodies.

However, it is also considered that body and mind can get better tuned and harmonized – through purity of ethical conduct and character, through practices of balanced posture and breath control, through concentration of attention, and through clarity of thought and depth of feeling. In the course of such psychosomatic tuning, it is conceived that the central channel can be opened up; so that the unlimited energy of kuṇḍalinī uncoils itself and rises up through a series of seven cakras, where a variety of subtle powers are progressively made manifest.

All disciplines of ritual are conceived to work through this kind of psychosomatic tuning. The tuning is both microcosmic and macrocosmic. It is meant to harmonize the microcosmic actions of a living person, who functions in a macrocosmic world. As ritual acts draw power from the depth of mind, they imply a dual functioning. A living person functions microcosmically, in conjunction with a corresponding macrocosm that is seen outside.

That correspondence, of macrocosm and microcosm, is investigated in the science of astrology. When the universe is seen at large, in the constellations of the sky, it naturally manifests a macrocosmic order, which is taken to express the same unlimited potential that is found manifested in our microcosmic bodies.

The stars and the planets are thus interpreted biologically, as macrocosmic signs of living potencies that subtly influence our microcosmic lives. The influence comes from a generic depth of mind that each microcosm shares in common with the entire universe.

In this biological interpretation, the stars and planets do not act mechanically, as objects that exert some external force upon our physical or mental actions. Our lives are not here conceived as driven from outside, by distant bodies in the sky. Instead, the movements of the planets and the stars are taken to be meaningful expressions, which speak to us of living potencies that influence our personalities and circumstances from within.

The movements of stars and planets are described mechanically, through astro*nom*ical calculations that are used to tabulate the almanac and to draw up a horoscope. But, as astro*log*ical configurations are interpreted, a reflective reasoning becomes essential, in order to apply the formal calculations to a living situation.

Astrology is thus a different kind of science from modern physics. It cannot be tested and applied mechanically, through external instruments and machines. It can only be tested and applied through the educated faculties of a living astrologer. Those faculties can sometimes be tested by using them to predict particular events, but the prediction is never just mechanical. It is always achieved through a living interpretation that is being put to test, so as to uncover and to clarify misunderstanding.

Moreover, it is quite explicitly conceived that astrology cannot be applied through prediction, in the way that our mechanical descriptions are applied. For example, when a bridge is being built, a mechanical description works by predicting the breaking stress of various structural components. This enables engineers to calculate an optimal design, which makes the best use of available materials.

But astrological descriptions are not meant for engineering. They are not meant to calculate the design of artificial structures and machines, whose operation has been separated from our living faculties. The descriptions of astrology are meant to work quite differently – by revealing the organic order of a natural universe, in which our living faculties take part.

Astrological descriptions are thus meant to be applied organically – so as to harmonize and clarify the living actions, thoughts and feelings of our bodies and our minds, in their journey through the world. This organic application is described by the Sanskrit word ‘prashna’, which means both ‘problem’ and ‘enquiry’. It implies a pragmatic investigation into problems that have arisen. And the investigation goes on to ask how those problems could be resolved. An astrologer thus uses a questioning investigation to determine what actions and rituals are appropriate and when they are best performed, in the course of individual life.

In Sanskrit, the science of astrology is called ‘jyotiṣha’. It is the science of ‘jyoti’ or ‘light’. Astro*nom*ically, an objective light is seen, shining from the stars and reflected by the planets. But astro*log*ically, all outward light seen shining in the sky is understood to manifest an inner light that shines subjectively, from a common background of all physical and mental experience.

As an astrologer interprets macrocosmic patterns in the sky, there is a reflection back – into a common depth of mind from which our individual lives and circumstances are conceived to arise, in their variety of different situations. The reflection works through a logical analysis of various living potencies that are seen manifested in the sky – through stars and planets showing regularity and change, in their various constellations and conjunctions.

The use of this analysis is educational. It is meant to sharpen an astrologer’s judgements and intuitions about living individuals, in the various situations that arise and develop in the course of their lives. It’s only thus, through a delicately educated

judgement, that an astrologer can make predictions and suggest effective actions which are helpful to particular individuals, in their different journeys through the world.

Humanities

In our modern education, as it stands at present, there is a certain bias towards mechanical sciences and the external world that they describe. Accordingly, we tend to think of information as a transacted commodity, which is recorded and conveyed in external forms. But, in old sciences of language, there is a very different view of information and recording. This older view is clearly shown in the English words 'inform' and 'record':

- The English word 'inform' comes from the Latin 'informāre'. It implies an inner formation: a giving of shape that arises from consciousness within. This is the root meaning of 'information'. It describes a communication whose external form is shaped from within, so as to express a living meaning.
- The English word 'record' comes from the Latin root 'cor' – which describes an essential 'core' of mind and meaning, found living in the 'heart' of each outward personality. To this root is added the prefix 're-', which means 'again' or 'back'. What's here implied is a reflection back from outer form into the inner core of heart, through which a living meaning is recalled to mind.

The same conception is implied in the Sanskrit words 'ākriti' and 'nibandhana':

- In the word 'ākriti', the prefix 'ā-' implies an inner origin and 'kriti' means a 'making' or a 'forming'. Thus, 'ākriti' describes a generic name whose form arises from within, so as to represent a universal principle that's shown in common by differing particulars.
- In the word 'nibandhana', the prefix 'ni-' means 'down' or 'back' and 'bandhana' means 'tying' or 'relating'. Accordingly, 'nibandhana' describes a 'tying down' or a 'relating back' of living meaning to an inner ground. This word 'nibandhana' is used to mean 'recording'. It conceives of recording as a tying down of meaning. But here, the tying down is not an objective correspondence, which relates outward symbols and their represented objects. Instead, it is a subjective grounding – which relates back in, to underlying consciousness.

In this old view of communication, all structured forms and their meanings are conceived as differing expressions of a common ground that is unstructured in itself. That ground is an inmost universal or generic principle. From it arise all differentiated things, as its particulars. As it becomes expressed, it gives rise to a variety of generic names and classes that in their turn give rise to more differentiation into further and further particulars.[2]

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[2] The concept of an inmost universal is described in the following ancient verses that are quoted in the *Vṛitti* commentary on Bhartṛihari's *Vākyapadīya*, 1.1:

tasyai 'kam api caitanyaṁ bahudhā pravibhajyate .	Thus consciousness, though one alone, seems differentiated forth in a variety of ways;

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The differentiation is resolved by observing structured form and interpreting its meaning, so as to understand how different things relate. That understanding is recorded by assimilation back into the underlying ground, which has continued through the arising and the resolution of apparent differences. Communication is accordingly conceived as a living process which keeps reflecting back and forth – between a structured world that is perceived outside and an unstructured ground of consciousness from where the world is known.

In Sanskrit, the science of linguistics is called 'vyākaraṇa', which means 'analysis'. The name is revealing. It describes an ancient science that is highly analytic, both in its formal descriptions of objective structure and in its reflective questioning towards an underlying ground of subjective knowing:

- The description of structure is laid out in a standard text by the grammarian Pāṇini. It is called the *Aṣhṭādhyāyī*. In a highly mathematical and concise way, it defines the complex structure of classical Sanskrit grammar – including the formal roots of words, their inflected conjugations and declensions, their augmented and compounded formations, and their syntactic use in sentences.
- The reflective questioning is opened up in a further text, called the *Vākyapadīya*. It was composed by Bhartrihari, who is a linguistic philosopher. In the *Vākyapadīya*, he makes a study that belongs to the classical tradition of Sanskrit linguistics; but the study is reflective. It starts out from the accepted formulations of the Sanskrit language in particular. But it makes use of these formulations to investigate more fundamental principles – which are shown in common by all meaningful experience, in all languages and cultures and in nature as a whole.

In traditional times, before the rise of modern mechanics, classical systems of education were centred on the learning of a classic language – like Arabic or Latin or Greek or Hebrew or Mandarin Chinese or Persian or Sanskrit. Accordingly, a student was initiated into higher learning by the formal systems of a classical language – in particular the systems of pronunciation, semantics, inflexion and syntax – which were analysed and cultivated through the science of linguistics. In this practical way, linguistics was the initiating science of a classical education. It was the first science that was used to train a student's mind; and other sciences were subsequently learned, through that initial training.

It was then only natural that linguistics should serve as a model for many other sciences, in a variety of classical traditions. Today, in our mechanical sciences, the

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aṅgārā-'ṅkitam utpāte vāri-rāśer ivo 'dakam ..	just like the convoluted show induced by energy of heat, in water vapour seen arising from the ocean's vast expanse.
tasmād ākṛti-gotra-sthād	It's that which stands, the inmost form, the common, universal principle of every different class.
vyakti-grāmā vikāriṇaḥ . mārutād iva jāyante vṛṣṭimanto balāhakāḥ ..	From it are born all kinds of changeable particulars: as rainy thunderclouds are born from air.

calculating discipline of mathematics provides a model of reasoned exposition that is central to many special branches and extensions of mechanics, through which we describe and fabricate external structures in the world. Similarly, in our various classical traditions, the educating discipline of linguistics has provided a model of reasoned exposition that is central to many further disciplines – through which we cultivate our communication of information, and thus clarify our cultural conceptions of a meaningful and valued world.

These further disciplines are called the 'humanities'. We use them in two ways. On the one hand, we use them creatively, through an essential element of imagination that conceives our various descriptions and pictures of the world. But on the other hand, we also use the humanities in a reflective way, through an equally essential element of interpretation, which finds meaning and value in the pictures that have been conceived.

In the Sanskrit tradition, the humanities include vyākaraṇa or linguistics, tarka or reasoned argument, itihāsa or history, purāṇa or mythology, sāhitya or literature, nāṭya or performing art, and shilpa or architecture. So also there are similar examples of educating disciplines that use a corrective analysis to cultivate descriptive and persuasive and conceptual capabilities, in many different traditions. But, in thinking of these disciplines as 'sciences', two delicate questions arise.

The first of these questions asks how science can accommodate the creative and artistic element of the humanities. They work through a combination of analytic science and imaginative artistry. Each of these disciplines is both an art and a science, at the same time. It is a human art that develops living skills of conceiving imagination. But the skills are refined through the systematic governance of a science that is reasoned analytically.

This throws into question a habitual opposition that we make, between *art and science*. The opposition is based on a restricted view of nature, as an external world that is opposed to the imagination we experience and develop in our minds. When nature is viewed more broadly, to include our inwardly conceiving minds, then the opposition between art and science is resolved. It is then quite legitimate for science to apply its study of nature to the intuitive and imaginative skills of our creative arts. And it is also quite legitimate that science should be tested and applied through the cultivation of those skills.

That broader view of nature can be seen in the very name of the Sanskrit language. 'Saṁskrit' means 'cultivated' or 'refined'; and hence the word 'saṁskriti' means 'culture'. But this is a cultivation that takes part in 'prakriti' or 'nature'. A look at the etymology is helpful here.

In the word 'prakriti', the prefix 'pra-' means 'forward' and 'kriti' means 'acting' or 'doing' or 'making' or 'forming'. Thus, 'prakriti' means 'acting forth' or 'producing forth'. In particular, it refers to an acting forth of nature that produces all physical and mental appearances.

In the word 'saṁskrit', the prefix 'sam-' means 'together with' or 'in harmony with' and 'krit' means 'acted' or 'done' or 'made' or 'formed'. Thus, 'saṁskrit' means 'harmoniously done' or 'harmoniously formed'. In particular, it refers to a cultivated expression that relates things properly together – in harmony with underlying nature, from which all expression has been born. It's here conceived that all arts

and cultures are refined reflectively – through a reflective grounding back into an underlying life of nature, in which they all participate.

It's from this reflective refinement that the second question arises, in thinking of the humanities as sciences. The question is concerned with *cultural relativity*. It asks how our expressions are used and interpreted, in a variety of contexts. As different cultures come into contact with each other, it becomes quite evident that our use of language and expression is essentially relative. As words and expressions are interpreted, they convey a meaning that is understood in relation to their cultural context.

All our statements and descriptions are thus culturally relative, including those that we make in our scientific disciplines. But then, how can these disciplines be truly scientific? How can their statements be interpreted to show us an impartial knowledge that applies to different cultures, beneath the many differences and partialities of cultural expression?

Today, this question is investigated in our modern disciplines of history and anthropology. These disciplines describe a variety of different cultures, over different periods of time and in different parts of the world. Through the use of modern media and communications, we are able to record and examine a far greater variety of cultures than was possible in traditional times; so that our modern history and anthropology is far better informed with externally recorded facts about historical events and cultural behaviour.

Thus, in the stories that we tell, we are now much better able to distinguish a historical recording of external facts from a mythical and fictional imagination that makes use of stories for more subtle purposes of conceptual meaning and emotional judgement. In the Sanskrit tradition, there was relatively little historical recording that was kept distinct from mythical imagination. In this particular tradition, an inward-going tendency has long been associated with an emphasis on 'purāṇa' or 'mythology', at the expense of 'itihāsa' or plain 'history'. It wasn't till the nineteenth century that Hindus took wholeheartedly to a recording of plain history, where external facts are kept carefully distinct from mythical and fictional embellishments.

From this lack of historical recording, it might be thought that Hindus have less interest in their past, and that they might not have much sense of cultural relativity. But, in fact, the opposite is true. In the Sanskrit tradition, there is a keen sense of relativity in different cultures, past and present. Early cultures are treated with a great respect, as seminal expressions of an ultimate knowledge whose expression has now grown to become more elaborate.

Each system of culture is described as a 'darshana' or a 'seeing'. Through its use of language and expression, each culture forms its own distinctive view of the world. And each such view is a relative approach to a common goal of true knowing that all cultures and their views express.

This relativity is exemplified by Shrī Rāmakriṣhṇa – who lived in Bengal, in the nineteenth century. Through his disciples, we have some fine historical accounts of his life, with a careful attempt to distinguish fact from hearsay and embellishment. He was extremely traditional in his own outlook; and he usually conceived the world in purāṇic and religious terms, as a worshipper of the goddess Kālī. But he very clearly recognized that this was only one view among many others. At various different times in his life, he adopted very different views, including Christian and Islamic meditations, as relative paths to a common goal of truth. And when it came to

choosing a successor, he handed on his teachings to Svāmī Vivekānanda, who was very much a modernizing rationalist. A major transition was accordingly achieved – between a teacher and a disciple who were educated very differently, in ways that might seem to be quite incompatible.

The same relativity is found, of course, in many different parts of the world. We find it also in the teachings of Socrates – as recorded by his disciple Plato – in ancient Greece, some two and a half thousand years before Shrī Rāmakriṣhṇa. In Plato's dialogues, we find that Socrates combines a very thorough reasoning with a profound respect for ancient traditions like those of Egypt, which must have had a rather different culture from Socratic Greece.

But when we speak like this, of different cultures that are relative, it must be understood that this relativity is cultural. As Socrates and Rāmakriṣhṇa make quite clear, it's only cultures that are relative, not truth. Each cultural expression is a partial instrument, limited by its particular conditioning. It is an instrument that shows a meaning, but the meaning is not fully shown. Each expression partly shows and partly hides its meaning. The meaning that is shown at first is only partly true. It's partly true and partly false as well. To understand it properly, it has to be interpreted more deeply, so as to uncover a truer meaning.

That's why the humanities are needed. They are educating disciplines, which cultivate our faculties of expression and interpretation, in the context of our various cultures. They help us to make better use of our partial and particular expressions; and they help us to interpret those expressions, towards a better understanding of less partial and more universal principles.

Psychology

As we make use of our cultural expressions, we each depend on inner capabilities of intuition. Those inner capabilities are deeply individual. They are accessed and developed individually, through a reflective turning of attention back from outward perception towards inner judgement.

It is through outward perception that attention turns towards particular objects, in a differentiated world. As objects thus appear in particular, they are interpreted as differing instances of general principles that are more deeply recognized. That recognition is achieved reflectively, by each of us. It is achieved at an inner depth of intuition which each person accesses and develops individually, in her or his own mind.

Our intuitions work through an inner judgement of value. They work through an intuitive discernment of right from wrong, as expressed in good and bad qualities. An inner judgement is thereby implied in qualitative feelings and emotions, which motivate our thoughts and actions towards objects. Thus motivated from within, our minds turn attention from one object to another.

As each object appears, it occupies attention. It is then shown as a perceived appearance, which is interpreted and taken into understanding. Through this interpretation, our minds inherently reflect – back into their conceiving thoughts, and further back into their intuitive judgements. In course of time, each mind works through a repeating cycle of expression and reflection:

- The *expression* goes out from subjective consciousness, as some current state of understanding is expressed by feelings that motivate thought and action towards an

object of attention. The object thus appears perceived, and the appearance is inherently followed by a reflection that absorbs it back in.

- The *reflection* turns back from changing perceptions to continued knowing. The changing perception of an outward object is absorbed by a conceptual interpretation of thought and by an intuitive judgement of feeling. From each such absorption, there results some further state of understanding, in a learning process that is carried on through time.

As time proceeds in any mind, objects keep appearing and disappearing. But the knowing of consciousness stays present through the change. It stays present in the background of experience, while objects come and go at the changing surface of mind's limited attention.

Each mind is thus a mediating process. Through its repeated cycle of expression and reflection, it mediates between its inner background and its outward surface. Its inner background is a subjective consciousness, whose knowing carries on through change. Its outward surface is a changing stream of objective appearances, which are produced by the turning of attention from one object to another.[3]

In the world that mind conceives, our senses show us different objects, in different parts of space. Thus different objects co-exist, in structures that are made of parts. But, in the process of each mind, there's no such co-existence. As mind's attention turns from one object to another, these objects appear one after another – in mental states that replace each other, at succeeding moments of time.

There is an essential difference here, between the external world and our internal process of conception. The world is made of structured space, where co-existing parts are related together in objective structures. Within each mind, there's only passing process, whose states occur in time alone.

In mind itself, there is no co-existence of any different things. Each moment brings a present state, in which all previous states and future states are absent. As each state of mind is experienced now, all previous states have passed away. And any future states have not as yet occurred.

This mental process is investigated in the science of psychology. Here, as we investigate our mental states, cause and effect is one-dimensional. Causation acts in one dimension only, from earlier to later states of time. Two states are known, one at a time, at earlier and later moments. They are known separately, each at its own time. And yet they are described as connected together, in a causal relationship that carries on through time.

What is this causal connection, which we experience in our minds? Given that an earlier state is never known together with a later state, how can we possibly connect these two states, so as to know that they are related to each other? In order to know that these states are related, there must be a knowing that stays present in them both. That knowing which stays present must be shared in common, by earlier and later states, beneath their differing appearances at earlier and later times.

That common knowing is called 'consciousness'. It is that knowing principle which is found always present, throughout all change of mental states. Each state of

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[3] See figure 1 (on page 23), for a diagram that represents this mediating cycle of expression and reflection.

mind expresses it, as it stays present through them all. It is their common principle, found differently expressed as each one of them appears.

In course of time, these states of mind get modified. As mind's attention turns from one object to another, our mental states keep on expressing consciousness. They each express that consciousness in their own different ways – which are experienced through a variety of changing perceptions, thoughts and feelings. Each state of mind may thus be described as a modified expression of unchanging consciousness. As the expression is renewed repeatedly, a changing stream of mind appears, displaying a succession of perceived and thought and felt appearances.

Here, in this changing stream of mind, causation may appear deceptively. At first it seems that cause produces its effects through time, but this is not quite true. An earlier state of mind has no direct effect upon a later state. In order to connect two different states, there has to be a reflection back – into that one, same consciousness which both of them express.

As an earlier state is absorbed back into consciousness, it must leave an after-effect which stays present there, beneath the change of mental states. Such an after-effect must continue then in underlying consciousness, beneath the changing surface of the mind. It must continue as a dormant potency, like a seed that is buried in the ground. Thus it stays hidden quietly, until it is stimulated to appear later on, like a seed that sprouts forth into a growing plant.

All causation in our minds is carried thus, by absorption into hidden seeds of potency. Each seed is an internal conditioning that has been left behind, by the appearance and absorption of some previous mental state.[4] The conditioning remains absorbed internally, in underlying consciousness, until it emerges through some later state that brings it to expression at the changing surface of appearance.

As these seeds of conditioning become absorbed, they get accumulated into character. But as they emerge into appearance, they are found expressed, in various ways that may add to the accumulation or reduce it. On the one hand, a person's mind may be expanded, by developing additional capabilities. Or on the other hand, a person's character may be refined, by removing unwanted tendencies.

The science of psychology may thus proceed in two directions: either by expanding mind through practices of meditation, or by refining character through ethical and motivational discernment. In either case, causation has to be understood reflectively. It has to be understood as acting from a changeless depth of consciousness, beneath the changing surface of our minds.

Through meditative practices, the mind reflects from its superficial perception of particular objects to some deeper intuition of more general principles. As meditation thus develops intuition, it penetrates to underlying principles, which are found shared in common by more superficial objects. Each principle is thereby understood as a common cause, beneath its particular effects in many different instances.

Through ethical and motivational discernment, the mind reflects from superficial emotions of changing desire to deeper judgements of more lasting value. Each such value is then understood to function as a common principle of motivating cause, beneath its particular effects on many different occasions.

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[4] In Sanskrit, such a seed of conditioning is called a 'saṁskāra'.

Whether through meditation or discerning value, psychology reflects into a depth of mind where conditioning has been absorbed from passed states into a person's character. It's there that general principles are intuitively recognized, and there that lasting value is more deeply judged.

That depth of mind is often called the 'unconscious'. But this description needs to be qualified. It refers to a depth of insight where mind is not conscious of external objects. What's here described is a pure consciousness that must be experienced inwardly. It can only be experienced by an inward reflection, from outward objects into underlying principles found deep within our minds. At that depth of insight, it is objects that are found to be absent. There, consciousness is present on its own, quite unmixed with any objects of perception, thought or feeling.

Philosophy

There is a further science that makes use of mind, but in a rather different way. This is the science of philosophy. It is a discipline whose aim is completely educational. It is not meant to achieve any object in the world. Nor is it meant to develop any physical or mental capability. All capabilities that it may develop are completely incidental to its proper aim.

That proper aim is described by the word 'philosophy'. In ancient Greek, 'philo-' means 'love' and 'sophia' means 'wisdom' or 'true knowledge'. The motivation of philosophy is thus described as an uncompromising love for truth. It is a discipline that looks for truth, beyond all compromise with falsity.

In this discipline, all capabilities are made to serve a single, over-riding aim. That aim is to know more clearly, by investigating and removing ignorance. Wherever knowing is confused, the clarifying must continue. It must keep on continuing, so long as any compromise remains, in what is taken to be true.

Thus, in philosophy, the use of mind is always skeptical. Philosophical ideas are not meant for the purpose of constructing theories or descriptions. Instead, they are meant to raise questions, about the beliefs and assumptions on which theories and descriptions have been built. These questions in themselves are constructed thoughts, which have arisen from beliefs and assumptions that are taken for granted. Accordingly, the questions must turn back upon themselves, to ask what their own concepts mean and what they take for granted.

As questions are thus turned upon themselves, they reflect into the depth of mind. But this reflection is not forcefully achieved, by any exercise of mental power. Instead, it is inspired naturally, whenever truth is genuinely sought. The search then turns upon itself; and thus keeps asking further down, to look for truer knowing. The asking does not work through force, but instead through a disinterested examination. Whatever mind conceives is examined carefully, in order to remove mistakes and thus to be more accurate.

In the European tradition, three approaches are distinguished, for philosophical enquiry:

- The first approach is called 'metaphysical'. It asks *what truly is*, beyond the changing show of appearances that nature manifests. Here, truth is approached as invariant being. It is approached as a common reality that has been differently shown, through a variety of changing appearances.

- The second approach is called ‘epistemological’. It asks *how knowing can be true*, beneath our partial perceptions and our prejudiced ideas. Here, truth is approached as unbiased knowing. It is approached through a detachment of true knowing from our personal conditioning.
- The third approach may be called ‘ethical’. It asks *for what we truly live*, and why things happen in the world. Here, truth is approached as motivating value. It is approached as an underlying motivation, for whose sake all actions and all happenings take place. That motivation is shown personally in our microcosmic lives. And it is shown impersonally in the macrocosmic world.

These three approaches are found also in the Sanskrit tradition, where it is conceived that truth has three aspects. The first of these aspects is called ‘sat’, which means ‘being’ or ‘reality’. The second aspect is ‘cit’, which means ‘knowing’ or ‘consciousness’. And the third aspect is ‘ānanda’, which means ‘happiness’. These three aspects are approached in three ways:

- ‘Sat’ or ‘reality’ is approached through ‘yoga’ or ‘union’. This is the way of meditation. It is meant to expand the mind beyond its limitations – through meditative exercises that withdraw from conflicting objects, towards a final union with that one complete reality which underlies all differences.
- ‘Cit’ or ‘consciousness’ is approached through ‘jnyāna’ or ‘knowledge’. This is the way of philosophy. It is meant to reflect beneath all partial faculties – by asking skeptical questions that keep on detecting and removing falsity, towards a clear knowing where no ignorance remains.
- ‘Ānanda’ or ‘happiness’ is approached through ‘bhakti’ or ‘devotion’. This is the way of spiritual surrender. It is meant to give up all petty claims of personal possession – for love of an ultimate value that motivates all feelings, thoughts and actions in the physical and mental world.

Each of these three aspects has a further counterpart, in our individual personalities. ‘Sat’ or ‘being’ is made manifest in our transforming lives. ‘Cit’ or ‘knowing’ is made manifest in our investigating thoughts. And ‘ānanda’ or ‘happiness’ gets to be manifest in our participating feelings, through which we take part in a functioning of nature that extends throughout the world.

As the aspect of being is approached through meditation, the living personality is meant to be transformed, towards a state of true perfection where all limitations have been overcome. As the aspect of knowing is approached through philosophy, the questioning of thought is meant to be reflected back, to an underlying truth where no falsity remains. As the aspect of happiness is approached through spiritual surrender, all feelings are meant to participate completely, in the realization of an ultimately valued truth.

In this division of three ways to truth, a special warning is needed, about the application of philosophy. In particular, it needs to be understood that philosophy is not an academic or an intellectual subject. Its questions can of course be debated academically, by intellectual scholars who belong to different schools of thought. It’s through this debating that each school sets out its own system of thought, in competition with other schools. Here, each school attacks the views of other schools, in order to establish a systematic view of world that represents the school to those who see it from outside.

But this construction of world views is not the actual practice of philosophy. Its actual practice is no building up of any theoretical construction. Instead, it is an asking down – which looks beneath all constructed thought and belief, in order to investigate a more direct experience of true knowing. As each school describes the world, it is only setting out an external view that must eventually turn inward, by provoking a reflective questioning. For every school of genuine philosophy, debate is no more than an intellectual preparation. It only serves to set the stage for a reflective questioning, which is the actual practice of philosophy.

That actual practice starts when one is skeptical of one's own views, thus opening one's own beliefs to question and correction. When one attacks the views and the beliefs of others, then this is just a theoretical debate with no essential effect upon one's own understanding. But when one's questioning turns round reflectively upon one's own mistaken assumptions, then one's own understanding is at stake. And if such questioning is genuine, then it amounts to an investigating experiment, in which one looks to see what clearer understanding may be found.

The results of such a questioning are then inherently practical; for the new understanding gets inherently expressed in further feelings, thoughts, actions and perceptions that arise from it. It's through such questioning that we get educated, as we learn in practice, from the process of continuing experience.

In the end, philosophy looks for a truth that is of value in itself. That truth is ultimately spiritual. To realize its final value, nothing more is needed than pure knowing. It needs no further justification, by any actions, thoughts or feelings that express it in some physical or mental form.

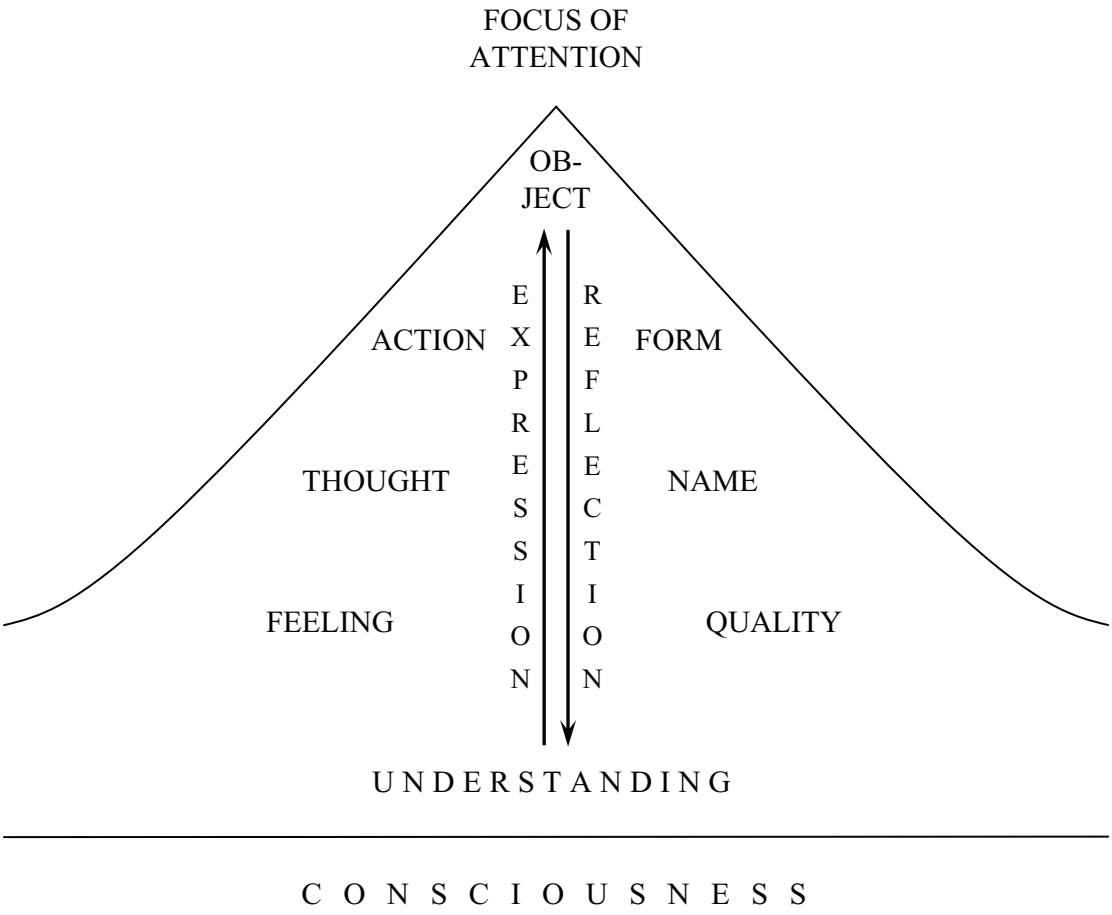
At this point, many people have a problem with philosophy. There seems to be a contradiction here, between the skepticism of philosophy and the faith that is required for a spiritual enquiry. But there is a simple way of resolving this contradiction. Philosophy is not a faithless enterprise. It does have a special faith, in the value of true knowing. So it investigates that knowing, by its reflective questioning of what the mind believes. If the enquiry is carried far enough, it reflects from all conceptions to investigate a knowing which is quite unmixed with any objects that the mind has conceived. That knowing is then purely subjective, and thus spiritual. It's in this way that philosophy proceeds to a spiritual enquiry.

There is, accordingly, a profound connection between philosophy and spiritual devotion. It is described in Shrī Shankara's *Viveka-cūḍāmaṇī* (stanza 31):

mokṣa-sādhana sāmagryāṁ	Among all ways of striving to be free,
bhaktir eva garīyasī .	it's love that is the best, one must agree.
sva-svarūpā-'nusandhānaṁ	To question one's own truth, to ask what's there:
bhaktir ity abhidhīyate ..	that is the love of those who ask with care.

Appendix – 2 diagrams

Figure 1 – Expression and reflection



At any given moment, a person's mind sees something in particular. So a particular object appears, at the front tip of attention. But underneath, many other things are understood, at the background of experience. That background is the depth of our minds. It is a depth where consciousness stays present, while objects come and go at the focus of attention.

From that underlying background, attention is drawn up, so as to focus on an object that appears. This focusing is shown in figure 1 (above). As an object appears in mind, it expresses understanding, from a continued background of underlying consciousness. The expression rises up through feelings, thoughts and actions that have turned attention to this particular object; so that it gets to be perceived, in a narrow focus at the surface of the mind.

As this object is perceived, its perception is reflected back – by observing the object's form and relationships, by naming the object and interpreting its meaning, and by judging its quality and value. The perception is thereby assimilated into a new state of understanding that is carried on in time – by absorption into underlying consciousness.

Then, from the new state of understanding, further feelings, thoughts and actions rise; thus turning attention to further objects that come into appearance and are

assimilated into understanding. This cycle of expression and reflection keeps on mediating back and forth, between the changing objects that appear and the background consciousness that carries on beneath. It's only thus that we can learn, as a variety of objects come and go, in the course of continuing experience.

If you look once again at figure 1 (previous page), you will see that it shows nature at five levels (in the broken triangle that is formed by the three lines). First, there is a level of objects – where our limited attention gets focused. Second, there is a level of action and form – where actions turn our attention towards particular objects and our experience is given shape. Third, there is a level of thought and name – where thoughts direct our actions and names are used to describe the forms that we perceive. Fourth, there is a level of feeling and quality – where feelings motivate our thoughts and acts, through an intuitive judgement of qualities and values. And fifth, there is a level of understanding – which expresses knowledge and assimilates what has been learned.

These five levels form a progression, from the gross to the subtle. This is a progression that has long been conceived, somewhat metaphorically, as the old 'five elements'. An interpretation is summarized in figure 2 (below):

- At the level of 'earth', objective structure is perceived through our external bodies, as assumed in our mechanical descriptions and technologies.
- At the level of 'water', an activating and transforming energy is observed through our organic faculties, as cultivated and developed in biological sciences that seek to harmonize our microcosmic lives with their containing macrocosm.
- At the level of 'fire', meaningful information is interpreted by our conceiving intellects, as educated and clarified by culture studies and the humanities.

Figure 2 – Five elements

Traditional element	*Level of appearance*	*Examining instrument*	*Scientific disciplines*
'Earth'	Objective structure	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

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Unchanging ground of reality and consciousness

- At the level of ‘air’, a qualitative conditioning is evaluated by intuitive judgements that are exercised and expanded in psychology and meditation.
- At the level of ‘ether’, continuing and common principles are investigated by the reflective reasoning of philosophical enquiry, which turns its questions back upon assumptions that have been taken for granted.

But in the end, all sciences are built on common ground, beneath the change and difference of appearances. That ground is the basis on which scientists communicate. On it depend all scientific standards, of accurate testing and of meaningful reference.