

EMBRYOLOGY AND ABORTION IN INDIAN ANTIQUITY: A BRIEF SURVEY

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The present article focuses on various aspects of human prenatal development and on the prohibitions pertaining to the termination of prenatal life as drawn from a selection of early Indian literature.

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INTRODUCTION

The ritualistic and liturgical *Vedas*, categorized as revealed or “heard texts” (*śruti*) are composed of the *Rgveda*, a collection of hymns of praises constituting the earliest source of knowledge concerning the Aryan religion, the *Yajurveda* (knowledge of the sacrificial formulas), the *Sāmaveda* (knowledge of the chants), and the *Atharvaveda* (knowledge of Atharvans). Verses pertaining to procreation and human prenatal development occur throughout the *Vedas*, and references to images such as seed, egg, womb, and embryo are common. One solemn hymn assigned to this ancient period explains the origin of the world out of the activity of a Golden Egg, or *Hiraṇya-Garbha*.¹ This Golden Egg, or Golden Embryo, conceived within the not-yet-existent, becomes the Lord of Being, and of beings. His name is Prajāpati, Lord of creatures.² In Vedic tradition, “the procreative act of Prajāpati is the prototype of *all* procreative acts,” and in man, the cosmic emission of Prajāpati is replicated by the emission of semen (*rasa*) which represents the concentrated essence of man.³ In a ritualistic sense the scattered seed emitted into the womb thus is a microcosmic version of the macrocosmic dispersal of Prajāpati’s creatures.⁴

ANTENATAL SAMSKĀRAS

Of the canonical stages and vocations of every brahmin such as *brahmacāri* (student), *gṛhastha* (householder), *vānaprastha* (hermit) and *saṇyāsī* (ascetic), the *gṛhastha* was most important since every hindu was expected to marry, run a home, and have children.⁵ The continuation of the universe, of human life and, more intimately, of the sacred order of things, “depended upon the birth of a son (*ṛṇacyuta*).”⁶ Since the desire for a son was a most holy wish, and the bringing forth of children was a

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sacred duty,"... the mystery of life, from the moment of conception onward through the stages after the birth of a child, was attended by prayers and ritual actions."⁷ Human development was understood to be determined physically as well as ceremonially, and procreation became enveloped in sacredness and ornamented by rites and *mantras*. The child's ontogeny from conception onward was hallowed by religious observances marking each stage of its development.

The life-cycle rites, or the rites of passage of traditional Hinduism, known as *samskaras*, include both pre-natal and post-natal ceremonies.⁸ In the prenatal *samskâras* the gods and goddesses associated with procreation were invoked by formulas, incantations and spells to bless the sacrificer's wife with conception, to protect the developing foetus, and to ensure a normal and safe delivery.

The Garbhādhāna and Garbhalambhana

The "womb-placing rite" (the *Garbhādhāna*) by which a man scattered his seed in the woman and the "securing of conception rite" (the *Garbhalambhana*) through which a woman received semen by her husband, were rites presupposing "a well established home, a regular marriage, a desire of possessing children, and a religious idea that beneficent gods helped men in begetting children."⁹ A desire for the procreation of sons was generally expressed, and *mantras* were recited for the purpose of securing the blessings of the gods.¹⁰ Cohabitation was meant to occur between the fourth and twelfth day following the cessation of menstruation when the wife was in her *ṛtu*, or in her season, and physically prepared to receive the male seed. The following hymn from the *Ṛgveda* was commonly recited for the protection of the germ placed in the womb:

"May Viṣṇu from and mould the womb
may Tvaṣṭar duly shape the form,
Prajāpati infuse the stream, and Dhātār
lay the germ (embryo) for thee.

O Senivāli, set the germ (embryo), set thou the
germ, (embryo), Saraswati: may the twain gods bestow
The germ (embryo), the Aśvins crowned with lotuses.

that which the Aśvins twain rub forth with the
attrition sticks of gold –
that germ (embryo) of thine we invoke, that in the
tenth month, thou mayest bear."¹¹

Since in Vedic mythology each organic function was consecrated to the tutelage of a presiding god, and since a thing generally was called by the name of its custodial deity, the hymn, in more recent times, has been paraphrased by *Bhiṣagaratna* to

promote a scientific agenda:

“May Viṣṇu (the presiding deity of ether and nerve force) expand thy uterus, may Tvaṣṭar (the presiding deity of heat and metabolism) bring about the full differentiation of the limbs and the sex of the foetus, may Prajāpati (the presiding deity of the ovum) sprinkle thy uterus, and mayest thou conceive through the blessing of the lord of human destiny. May Sarasvati (goddess of intellect) and the Aśvins, the surgeons of the gods (the presiding deity of fission, etc.) help thee in taking the seed.”¹²

By the performance of additional rites of passage throughout gestation, the seed potential was held to be physically and ritually transformed, converted from its disseminated state, and metamorphosed into a shaped ontological composition.

The Pumsavana

The *Pumsavana* was a ritual generally conducted towards the end of the first trimester of pregnancy and before the throbbing of the foetus in the womb. It was aimed at sex determination, with a very strong bias in favour of the quickening of a male child. It was usually held when pregnancy had become apparent, and at a time when the moon stood in conjunction with a constellation having a name of masculine gender.¹³

The Garbharakṣana and Śimantonnayana

The *Garbharakṣana* was enacted for the protection of the foetus in the fourth month of pregnancy, and the *Śimantonnayana* (or hair-parting ceremony) was carried out anytime between the fourth and eighth month in preparation for parturition. The primary intent was to ward off and to destroy anything that could endanger the life of the mother, the developing embryo, and the newborn child. The following mantra from the *Ṛgveda* was designed to protect both mother and child:

“May Agni, yielding to our prayer, the Rākṣas-slayer (evil demons) drive away,
the malady of evil name that hath beset thy labouring womb
Agni, concurring in the prayer, drive off the eater of thy flesh.
the malady of evil name that hath attacked thy babe and womb.
that which destroys the sinking germ, the settled, moving embryo,
that which will kill the babe at birth, even this will we drive far away.
that which divides thy legs that it may lie between the married pair,
that penetrates and licks thy side, even this will we exterminate.
what rests by thee in borrowed form of brother, lover, or of Lord,
and would destroy thy progeny, even this will we exterminate.
that which through sleep or darkness hath deceived thee and lies down by thee,
and will destroy thy progeny, even this will we exterminate.”¹⁴

This incantation, in recent times, has been understood to mean that the destruction of an embryo at any stage of pregnancy such as at conception (“the sinking germ”), at

implantation (“the settled germ”), and at the time of quickening (“the moving germ”) is unacceptable and contrary to the eternal standards contained in the *R̥gveda*.¹⁵

Various *mantras* were directed against diseases and deformities commonly addressed as evil-spirits that attack women who are about to become mothers. As for such demonic attacks the *Āśvalāyana-Smṛti* claims that:

“Evil demons bent on sucking blood, come to women in their first pregnancy to devour the foetus...these invisible cruel flesh-eaters catch hold of a woman in her first pregnancy and trouble her...”¹⁶

The *Mārkaṇḍeya Purāṇa*, like most *Purāṇas*, similarly refers to causes personified as demonic beings, and in one canto describes the evil acts of the offspring of a demon that bring about the abortion of foetal life and adversely affect both animal and plant generative phenomena.¹⁷ Prayers were offered to placate or to remove such evil forces, and mantras were recited to frighten away anything harmful to the unborn germ:

“Arāyi, one-eyed limping hag, fly, ever-screeching, to the hill. We frighten thee away with these, the heroes of Sirimbitha. Scared from this place and that is she, destroyer of each germ unborn, Go, sharp-horned Brahmanaspti and drive Arāyi far away...”¹⁸

A more rational approach is provided by the *Suśruta Saṃhitā* which instructs mothers to protect themselves and their unborn children by avoiding “all acts harmful to the uterus,” such as:

“...a blow on the foetus, constant pressure on that part of the abdomen, travel in a bad conveyance on uneven roads, hearing of sudden loud sounds... she should not sleep on her back, for the umbilical cord may twine round the neck of the foetus.”¹⁹

Similar advice may be found in the *Matsya Purāṇa* where Kaśyapa instructs his pregnant wife to carefully follow strict instructions to avoid a possible miscarriage, “...otherwise abortion takes place without doubt.”²⁰

The Jātakarma

The ceremony named *Jātakarma*, or birth-making, took place at the time of delivery and after the cutting of the umbilical cord.²¹ As for the onset of parturition, it is stated in the *Śatapatha Brāhmaṇa* that a six months embryo is the last that lives when born, i.e., the foetus prior to six months does not survive if born prematurely.²² The same text observes that the foetus becomes full-fledged in the tenth lunar month. It develops at the bottom of the womb and is positioned with:

“...its hands on either side of the knees: and its thumbs are placed upon the knees, and

its fingers in front of them; behind the knees are the eyes, and between the knees is the nose; and the buttocks rest on the heels; the arms and legs lie outside...Afterwards in the course of time the foetus turns round with its face downwards...it is born in the ninth or tenth month."²³

On occasion a difficult delivery was rendered normal by *smoking* the vagina with the skin of a black serpent burnt over dried *kuśa* grass (*Poa cynosuroides*).²⁴ Among the Greek Hippocratic physicians as well, it was "considered efficacious by some to smoke the foetus out, like a fox from its lair," if the infant was behaving in an uncooperative fashion:

"...A spout was placed in the vagina and the steam from a stinking brew of burnt feathers, castorium, etc. introduced. This offended the nostrils of the infant and made further residence in the womb objectionable to it"²⁵

At the birth of a son, the child's father would pray that the gods would bestow vital power, strength, intelligence, wisdom and moral character upon the child.²⁶

HUMAN EMBRYOLOGY

The Vedic embryologists classified living beings in threefold or fourfold divisions according to their modes or origin. Some texts distinguish between egg-laying *oviparous* species and live-bearing *viviparous* species. The *Chāndogya Upaniṣad* divides living things into *āṇḍa-ja* (egg-born); *jīva-ja* (live-born from the womb); and *udbhid-ja* (propagated from sprouts).²⁷ The division is fourfold in the *Aitareya Āraṇyaka* and the *Vāyu Purāṇa*, both of which refer to births from eggs like birds and serpents, and from the uterus like mammals and man. Some forms are said to be produced spontaneously like insects from heat and moisture (*svedaja*), or from vegetable matter (*udbhid-ja*).²⁸ That embryos of *viviparous* organisms such as the human species were understood to possess distinct extraembryonic membranes is particularly evident from the literature pertaining to consecration rituals. The sacrificer, or the person to be consecrated, symbolically was accounted as an embryo clothed in garments representing the amniotic and chorionic membranes.²⁹ In the ritual of the *Soma* Sacrifice, for example:

"Him whom they consecrate the priests make into an embryo again. With water they sprinkle; the waters are seed; verily having made him possessed of seed they consecrate him...they purify him...they conduct him to the hut of the consecrated; the hut of the consecrated is the womb of the consecrated verily thus they conduct him to his own womb; therefore (in and) from a firm womb he stands and moves; therefore (in and) from a firm womb embryos are placed and grow forth...With a garment they cover him; the garment is the caul of the consecrated...Above that is the black antelope skin; the placenta is above the caul; verily thus they cover him with the placenta. He closes his hands; verily closing its hands the embryo lies within; with closed hands the child is born...Having loosened the black antelope skin, he descends to the final bath; therefore embryos are born freed from the placenta; with the garment he descends; therefore a child is born with a caul..."³⁰

Towards the end of the ceremony the sacrificer was separated from the protective caul and made to emerge, as it were, in a second birth from the embryonic state as a regenerated being.³¹

The Seed

The male semen, or essence, was thought to be extracted from all the parts of the body.³² It was said that “in the self, truly, one bears another self,” the *ātman* or counterpart (*pratirūpa*) of the procreator, for:

“His counterpart comes to him (in his children), not that which is not his counterpart. His counterpart is born from him.”³³

While it was understood that the semen was amalgamated with the woman’s share in the womb, human development was not entirely attributed to material causes. As explained by Dasgupta (1952), a simple union of the semen of the father and the blood (*śoṇita*) of the mother can only produce a foetus “...when the *ātman* with its ‘subtle body,’ constituted of air, fire, water, and earth, and *manas* (or mind), becomes connected with it by means of its *karma*.”³⁴ Thus, in consequence of a commingling of seeds and the activity of the ‘subtle body’, a new material entity is brought into being.³⁵ The woman, it was held, took no organizing part in the replication of the male self.³⁶ She was presented as but a “field freshly ploughed, eager for seed,” and her womb was viewed as an incubation chamber for the “self-becoming” (*ātmaabhūya*) of the planted self.³⁷

Ideas pertaining to the transmission of sex characteristics and somatic traits are scattered throughout the Vedic-brahmanic literature. It is noted in the Brāhmaṇas that children are born male or female according to ‘plus’ (*atirikta*) or ‘minus’ (*ūna*) properties, and the writings of Manu explains sex determination in terms of quantities of seeds contributed by the respective parents. Thus, for example:

“...a male child is born when the seed of the man is greater, and a female child when the seed of the woman is greater. If both are equal, a hermaphrodite is born, or a boy and a girl; and if the seed is weak or scanty, there will be miscarriage.”³⁸

Among the various parental contributions to the offspring, the ancients thought that the hair, nails, teeth, bones, nerves, veins, arteries, tendons, ligaments and the sperm all were derived from the seed of the male, and that the skin, blood, flesh, fat, heart, liver, spleen, kidneys, stomach, intestines, etc., were derived from the seed of the female.³⁹

The principle of straight-line descent was also clearly recognized by the Vedic writers. Like was thought to give rise to like. Indeed, centuries of experience with

domesticated animals and observations on human generation undoubtedly had made it evident that animals become manifest to their own forms, and that "...what like the seed is fashioned in the womb, such like it is born."⁴⁰ In others words, "The *same* seed which is laid is brought forth."⁴¹

The Formative Stages

The *Garbha Upaniṣad*, possibly belonging to the later Upaniṣadic age, provides the following interesting overview of prenatal development:

"...From the pairing at the time of the season there originates after one night a nodule, after seven nights a bubble, within a fortnight a lump, within a *month* it becomes hard, after *two* months originates the head, after *three* months originate the parts of foot, in the *fourth* month ankles, belly and hips, in the *fifth* the vertebral column, in the *sixth* the mouth, the nose, the eyes, the ears, in the *seventh* the embryo is equipped with the soul (*jīva*), in the *eighth* it is complete in all parts..."⁴²

The *Garbha Upaniṣad* reads like a treatise on embryology, and, according to Winternitz (1924), is "...obviously a meditation on the embryo with the aim of preventing rebirth in a new womb."⁴³ The *Yājñavalkya-Smṛti* provides a similar rudimentary account of embryonic development and is in close agreement with the description of foetal development as found in the earlier *Caraka Saṃhitā*.⁴⁴ Antecedent developmental and heredity concepts known to earlier Vedic embryologists, and alluded to in the *Atharvaveda*, are also dealt with in the *Suśruta Saṃhitā*. The latter collection provides a rudimentary account of human epigenetic development, and makes peripheral reference to the onset of "awareness," or consciousness:

"In the *first* month (after conception) the embryo is formed. In the *second* month there results a compact mass. If this is globular (*pinda*), it's a male, if longish (*pēsi*) it's a female...In the *third* month, five protuberances appear for the hands, legs and head, while the division of the other bodily limbs and sections is hardly visible (*sukṣma*). In the *fourth* month the division of these other limbs and sections appear clearly, while awareness as a distinct category (*cetanādhātu*) manifests itself in relation to the appearance of the foetus' heart... Also in the *fourth* month, the foetus expresses desires in respect of sense-objects...In the *fifth* month, the coordinating sense (*manas*) becomes more aware, and in the *sixth* the intellect (*buddhi*) is manifest. In the *seventh* month, the division of the bodily limbs and sections is more defined; in the *eighth* month the life-force (*ojas*) concentrates...In one or other of the *ninth, tenth, eleventh, or twelfth* months, birth takes place, or else (the pregnancy) is void."⁴⁵

In the *Mahāpurāṇas* the child's intrauterine development was again explained to various sects by writers possessing only a rudimentary understanding of embryology based on superficial observations of aborted foetuses.⁴⁶ In the *Nārada Purāṇa*, for example, Sanaka states that the virile semen mixed with the blood of the woman becomes a foetus within five days of the entry of the soul. The development of the

foetus is then outlined chronologically as follows:

"10. ...Within *half a month* it becomes a fleshy mass. Within *a month* it attains the size of a *pradeśa* (the span measured with the forefinger and the thumb). 11. From that time onwards it begins to move within the belly of the mother, thanks to the action of the wind. Although it has no consciousness, it is unable to stay in one single place within the belly of the mother, due to the unbearable heat and pain. 12. When the *second month* is complete it takes human shape; when *three months* are over, the hands, legs and other limbs are formed; when *four months* elapse, the knots and joints of all limbs are clearly developed; when *five months* pass away, the nails appear; when *six months* pass off, the nail-joints become distinct..."⁴⁷

The *Garuḍa Purāṇa*, the *Śiva Purāṇa Umāsamhitā*, the *Mārkaṇḍeya Purāṇa*, and the *Agni Purāṇa*, all give similar incomplete accounts of the month-to-month progressive development of the human embryo.⁴⁸ Mishra (1970), comparing the description of human embryology in the *Agni Purāṇa* to earlier Hindu texts notes, that apart from minor variations, the description in the *Agni Purāṇa* is based almost entirely on the Kashmirian *Viṣṇudharmottara Purāṇa*.⁴⁹ Written at about the same approximate time as the *Agni Purāṇa*, the *Nyāyakandalī* provides a more interesting account by explaining the development of the foetus in atomistic and almost molecular terms. Śrīdhara, the author of the work, explains that:

"After the union of the father's semen and the mother's blood there is set up in the atoms constituting them a change through the heat of the womb, such that their old colour, form, etc, become destroyed and new similar qualities are produced; and in this way, through successive formation of dyads and triads, the body of the foetus develops; and, when such a body is formed, there enters into it the mind...Small quantities of food-juice of the mother go to nourish it. Then, through the unseen power (*adr̥ṣṭa*), the foetus is disintegrated by the heat in the womb into the state of atoms, and atoms of new qualities, together with those of the food juice, conglomerate together to form a new body."⁵⁰

It is noteworthy that the causes of the formation and development of the foetus in the above excerpt are seen from both reductionist and holistic perspectives. Reductionist in terms of atoms and Pythagorean-like dyads and triads, and holistic in terms of the combination of constituents and the combined effect of all the elements. Dasgupta (1952) observes that "the idea of such a combined effect of causes as leading to the production of a *perfect whole* seems to have a peculiar Buddhist ring about it."⁵¹

As for what parts form first in embryonic development, both Dasgupta (1952) and Walker (1968) give the opinions expressed by various authorities.⁵² Omitting some references cited by Dasgupta, Walker writes that:

"... according to *Kumārasira* the head forms first since it is the seat of the organs of sense; according to *Kāṅkāyana* the heart forms first, since it is the seat of consciousness; *Bhadrakāpya* held that the naval forms first since food is received there; according to

Śaunaka the intestines, since the *vāyu* or wind has its seat there; according to *Baḍisa*, the hands and feet, since they are the instruments of action; *Dhanvantari* held that all parts grow simultaneously; *Suśruta* and many others declared that the embryo grows by a process of stratification, i.e., in layers; according to *Kāśyapa*, no one knows.⁵³ (emphasis added)

Needham (1959), while mentioning *Kumāraśirā* and *Śaunaka*, introduces three additional names such as *Ḍalhana*, *Kṛtavīrya* and *Pārāśara*.

The Vedic embryologists held that the developing embryo, united to the woman, comes into individual self-becoming (*ātmabhūya*) with the woman, "...just as a limb of her own..."⁵⁴ A similar claim was made by the Talmudic scholars of antiquity who held that up to the moment of parturition, the fetus is an organic part of the mother.⁵⁵ In Talmudic terms the fetus was referred to as the limb, or "the thigh of its mother," and the idea was presented in the form of an analogy in which a slave is seen as the "hand" of his master, in much the same way that a fetus is viewed as the "thigh" of its mother.⁵⁶ The analogy likely had significance only in terms of defining ownership and dependency. Vedic, Hebrew and Greek writers alike seemingly understood the embryo to be attached by a root-like branching circulation from the embryo's navel (umbilical cord) to its maternal source of nourishment, not unlike a plant anchored by its roots to the ground.⁵⁷ The unborn child adhering to the womb was, according to Philo Judaeus (20 BC to 50 AD) of Alexandria, a "part of its future mother," and the Greek writer Lucius Mestrius Plutarchus (ca. 46-125 AD) "accounted (it a) part of the mother's belly."⁵⁸ The concept is found also in the ancient legal records of the Romans. The *Digest*, for example, states that the unborn child is a part of the woman, or of her entrails (*pars viscerum matris*).⁵⁹ Roman writers such as Marcus Tullius Cicero (106 to 43 BC) and Publius Ovidius Naso (43 BC to 17 AD), however, stressed that two separate individuals are present in one, an idea also expressed by the Christian writer Tertullian who claimed that the foetus merely "shares its own state" with the mother, and thus is distinct from the mother.⁶⁰

Teratology

In the *Gṛhyasūtras* of Āśvalāyana and Hiraṇyakeśin, ceremonies are described for the "prevention of disturbances which could endanger the embryo." Prayers are provided for a child to be "born without deficiency, with all its limbs, not blind, not lame, not sucked out by Piśācas."⁶¹ The birth of mouthless offspring, as well as of those having more than ordinary limbs are referred to in *Manu*, the *Viṣṇu Dharmasūtra* and the *Matsya Purāṇa*.⁶² The latter text, as well as the *Mārkaṇḍeya Purāṇa*, additionally refer to malformations resembling birds, scorpions, and snakes being developed from human conceptions.⁶³ Such deviations were viewed in earlier Chaldaeo-Babylonia texts as divine signs and warnings of "the destruction of the country and family in which such births takes place."⁶⁴ The *Garbha Upaniṣad*, among other things, attributes

the birth of children born blind and lame, as well as hunch-backs and dwarfs to stupefaction of the mind.

Although the fine mechanics of the inheritance of traits was not understood, it was nonetheless appreciated that such bodily defects could be transmitted to offspring. Since all structures were thought to have their precursor germs in the father's semen, it was naturally assumed that defective germs, all depending on the degree of defectiveness, would result in the inheritance of correspondingly severe structural deformities.⁶⁵ In some instances, developmental excesses or deficiencies were attributed to disturbances of elements and to defective causes altering inherent potentialities and balances, and thus structural proportions. In consequence, those desiring children were admonished to carefully seen connection only with someone "free from such bodily defects."⁶⁶

ABORTION (GARBHĀSRĀVA)

The evidence about ancient Indian ideas on abortion is both varied and complex. As an embryologist by training I recognize that the termination of a pregnancy effectively destroys not only the new life developing in the mother's womb, but also the expectancy of that life. One Roman lawyer and statesman long ago made it clear that an abortion "cheats the father of his hopes, his name of continuity, his family of its support, his house of an heir, and the state of a citizen-to-be" (Cecero, *Clu.* 11.32). Most of the reasons given for the termination of a pregnancy in Vedic India, as everywhere else, have remained practically the same throughout history, i.e., women have sought abortion when either too young or too old; when physically weak or unfit; when the conception has been contrary to socially sanctioned relationships; and when women already had more children than they could adequately provide for. The ancient literature of the Hindus, however, conveys the impression that any attempt to abort an unborn child or to expose a newborn child was subject, in general, to severe moral condemnation and social disapproval.⁶⁷

Transmigration: A Repetitive Cycle

A criminal violation of a child's expectancy of life, and thus the sanctity of life principle, carried serious consequences not only for the present life, but also for the afterlife, and for lives yet to come. The Hindus believed in the transmigration of the incarnate and immutable soul (*ātman*).⁶⁸ Although release from *samsāra* was the *summum bonum* of most types of orthodox Hinduism, the *ātman* of the destroyer of human life was doomed to live a tragic and meaning less *samsāric* existence, ever wandering and struggling to attain spiritual release (*mokṣa*) from *karmic* consequences and from the repetitive cycle of birth and death (*samsāra*). Following his demise, the slayer of a foetus was assigned to one of the many "hells" into which sinners presumably

fall, and having served time, was reborn as something wretched and miserable.⁶⁹ One author writes that, according to religious texts, a woman who practises abortion:

“...is equated in this world to a prostitute who would be born a prostitute in the next birth too...All her pregnancies in the next *janma* result in abortion.”⁷⁰

At the beginning of each new cycle, and immediately prior to birth, the “soul” of the unborn infant would remember its former incarnations. In the *Garbha Upaniṣad*, for example, it is stated that when consciousness becomes manifest in the ninth month:

“...then he (the unborn infant still in his mother’s womb) remembers his earlier births and has a knowledge of his good and bad deeds: ‘After I had thousands of times before lived in the mother’s womb, I enjoyed many kinds of food, and drunk many a mother’s breast. Born was I, died again and was continually born anew...Alas! sunk in the ocean of grief, I see no remedy. If once I escape from mother’s womb, I shall turn to Maheśvara...to Nārāyaṇa, who destroys all the evil and bestows the reward of liberation...I shall study the Sāṃkhya Yoga...I shall meditate on the Brāhman’, but then, when reaching at the opening of the genital organs...he can no more remember his births and deaths and has no knowledge any more of good and bad deeds.”⁷¹

A very similar account is given in the *Nārada Purāṇa* where the soul of the foetus ready for birth is said temporarily to have the faculty of remembering its previous births:

“It remembers the miseries in hells it has experienced before:...As soon as he comes out of the womb, he becomes unconscious. The external wind enlivens him. Immediately after the contact with the external wind, he loses all his memory...the creature that is now born as a baby experiences many sufferings etc...”⁷²

The Greek philosopher Plato, as well as the Hebrew Sages of antiquity, also held that unborn souls have knowledge of prior existences that are forgotten immediately following birth.⁷³

Foeticide and exposure of the newborn were alike regarded as sinful acts requiring expiation. One who destroyed a human embryo could be released from that sin only “by penance well performed,” or by the observance of appropriate rites of purification.⁷⁴ In the absence of proper penance, the intentional interruption of human life, was thought to increase one’s own *karma* and thus to delay release from the cycle of rebirths and redeaths.⁷⁵ Only through a correct knowledge of one’s spiritual nature, and through proper moral and social conduct (*dharma*) was eventual escape thought possible. Release, in an esoteric sense, perhaps, meant to cease to be as an individual reality within the ultimate reality, or brahman.⁷⁶ This release from *karmic* consequences saves from:

“...conception, old age, death, *samsāra* and from the great fear...it saves him from all

sin, it saves him from death, from the killing of a brāhmana, from the killing of (an) *embryo*, from the killing of a hero, *from all killing*, from saṃsāra, from everything..."⁷⁷
(emphasis added)

As for the slaughter of animal life, the killing of animals as a sacrifice to the gods was, according to Aiyer (1976), "justified on the authority of Vedic injunctions."⁷⁸ The slaughter of animals for food was not regarded as unlawful "provided it was done without needless cruelty." The slaying of some animals for guests, for example, was prescribed in the *Śatapatha Brāhmaṇa* and the *Śāṅkhyāyana Gṛhyasūtra*.⁷⁹ Even sages like Yājñavalkya, Gautama, Āpastamba, Baudhāyana, and Vasiṣṭha all appear to have allowed meats not specifically prohibited, to be eaten.⁸⁰

Penalties: A Loss of Caste

The immediate penalty for aborting an unborn child was the expulsion from any of the distinct hereditary castes of the community.⁸¹ It was a penalty carrying severe implications. In *Āpastamba's Aphorisms on the Sacred Law* the several actions resulting in loss of caste are listed as:

"Stealing (gold), crimes whereby one becomes an *Abhiśasta*, homicide, neglect of the Vedas, *causing abortion*, incestuous connection with relations born from the same womb as one's mother or father, and with the offspring of such persons, drinking spiritous liquor, and intercourse with persons the intercourse with whom is forbidden."⁸²
(emphasis added)

A loss of caste is also mentioned in *Gautama's Institutes* where it is written that:

"A woman becomes an outcast by *procuring abortion*, by connection with a (man of) lower (caste) and (the like heinous crimes)."⁸³ (emphasis added)

Again, banishment is mentioned in the *Nārada* where, under a description of mutual duties of husband and wife, it is stated:

"One who wastes the entire property of her husband under the pretense that it is (her own) *Stridhana*, or who procures abortion, or who makes an attempt on her husband's life, she shall banish from the town."⁸⁴

While the acts penalised by loss of caste may have been many and varied, they, according to those knowledgeable in the sacred laws, could be reduced to three, for:

"...those versed in the sacred law state that there are three acts (only) which make women outcasts, (viz.) the *murder* of her husband, *slaying* a learned Brāhmaṇa, and the *destruction* of the fruit of their womb."⁸⁵ (emphasis added)

Furthermore, since the act of killing clearly is the common denominator, penalty of

loss of caste may have been enforced only in serious cases involving the willfull taking of human life at any stage.

Of those involved in the actual procuring of an abortion, however, the sin of the abortionist (*bhrūṇahan*) was clearly the greatest.⁸⁶ Guilt for wrong-doing for any other crime could be transferred to someone who had committed a greater offence, i.e., the transfer could be repeated by passing the guilt for a lesser crime to someone having committed a more serious crime or sin, until the guilt eventually was laid upon one who had slain a man. The man-slayer, in turn, could only wipe off his guilt upon one who had committed an abortion. Beyond him who had committed an abortion the sin could not be transferred. Therefore, the *Atharvaveda*, in a section on expiation of sin and defilement, states:

“Wipe off, O Puṣan, the misdeeds upon him that practiseth abortion.”⁸⁷

Like the legendary and infamous Aśvatthāman of the *Mahābhārata*, who hurled his *brāhmaśiras* weapon into the pregnant wombs of the Pāṇḍava women, thus destroying Uttarā’s unborn child, and, in consequence, was “doomed for three thousand years to wander over the earth,” so too the abortionist, it may be conjectured, was thought to suffer the consequences of his acts for a determined duration.⁸⁸

Contraception: A Wasting of Seed

An intentional interference with the procreative act itself was also seen as an abortion, or killing of a presumptive child. It was perceived in much the same way that Onan’s act of contraceptive marital intercourse was viewed by the early Hebrews as “a shedding of innocent blood.”⁸⁹ A husband approaching his wife prior to her season was deemed polluted and similarly taken to be guilty of abortion since his semen, the very essence of the male procreator, “was scattered in vain.”⁹⁰ Whether guilt was applied where birth control methods were being employed to prevent conception is uncertain. Certain it is, however, that contraceptive methods in ancient India were not unknown.⁹¹ Indeed, in modern times, as maintained by Dash and Basu (1968):

“...disproportionate attention has been focused on abortion and infanticide for limiting an undue number of children, and relatively little heed has been paid to the more elusive evidence bearing on widespread and consistent groping towards artificial control of child-birth by preventive measures.”⁹²

A husband in good health who refused to approach his wife in order to raise up children was also said to have caused abortion. This held for the wife as well, for she, by refusing to go to her husband, was abandoned after being declared “as one causing abortion.”⁹³ Again:

"He who does not give away a marriageable daughter during three years doubtlessly contracts a guilt equal to (that of) destroying an embryo. Such will be the case if anybody asks her in marriage, and also if nobody demands her."⁹⁴

It may perhaps be cautiously conjectured that by making it impossible for his daughter to have children, the father presumably was preventing the birth of presumptive progeny, and in that sense, was guilty of "destroying an embryo."

As observed by Baudhāyana, it was even possible to contract a guilt equal to that carried by the killer of an embryo for very different offences. In the *Śatapatha Brāhmaṇa*, for example, it is stated that "one who eats the flesh of an ox, or a cow, will be reborn" as a strange being, as one of whom there is evil report such as, 'he has expelled an embryo from a woman.'⁹⁵ It is further stated that a Sacrificer, or priest, having failed to follow "completely" the ceremonial initiation rituals was *despised* more so than "he who kills a human embryo."⁹⁶

Obstetrics: A Saving of Life

On the subject of spontaneous and induced abortions, Suśruta observes that:

"Menstrual flow in the second and third months of pregnancy should be considered an abortion. This is presumably a *spontaneous one*. The foetus is in a liquid state for the first four months and hence its destruction or issue from the womb is called an abortion (*āsrāva*); the limbs of the foetus gain in firmness in the fifth and sixth months of pregnancy and its issue at this time is called *garbha-pāta*."⁹⁷

While a spontaneous abortion is clearly unavoidable, induced abortion should always be a last recourse. Only in irredeemable situations, when it was thought necessary that an abortion should be induced to remove a real threat to the mother's life, was it proper to terminate a pregnancy.

Suśruta describes abnormal foetal positions, including breech, transverse, single and double arm presentations. In one place it is noted that living child should be surgically removed immediately from the womb of a dead mother.⁹⁸ Sarton (1975), observes that Suśruta systematically performed surgical obstetric operations including caesarean section presumably to save unborn living children in cases of difficult labour, and to destroy dead or poorly positioned foetuses for the sake of saving the lives of endangered mothers.⁹⁹ He recognized that by a cruel necessity a normal unborn child impeding parturition occasionally had to be destroyed. Like the later Greek physicians Hippocrates, Asclepiades, Erasistratus, Herophilus and Soranus, he must have fully realized, as Tertullian (ca. 160 – 220 AD) puts it, "...that a living being had been conceived, and pitied this most luckless infant state, which had first to be put to death, to escape being tortured alive."¹⁰⁰

CONCLUDING STATEMENT

The Vedic-brāhmaṇic literature reveals a pervasive interest in human generative and embryological phenomena. The ancient Hindus, like the Hebrews and the Pre-socratic Greek philosophers, speculated on seeds, the causes of sex determination, parental resemblance, twinning, the development of the foetus, and foetal malformations.¹⁰¹ Their ideas confirm that:

“if science be regarded as any branch of systematized knowledge which has been tested and analyzed by the standard of experience, then all existing peoples, advanced or primitive, may be said to have (had) a science of embryology.”¹⁰²

Vedic-brāhmaṇic descriptions of human antenatal development lacked in detail, and explanations of generative phenomena generally were clouded by metaphysical notions pertaining to transmigration. The records, while exhibiting some agreement with respect to the earliest stages of embryonic development, generally exhibit a lack of concurrence with respect to the order of appearance of later developing structures.

Human life in-the-making, although poorly understood, was held in high regard. Yet, while induced abortion was frowned upon, use was made of abortive remedies.

REFERENCES AND NOTES

1. *R̥gveda*, 10. 121,1-10. In Griffith, R.T.H., *The Hymns of the R̥gveda*. Chowkhamba Sanskrit Studies, 35. Varanasi: Chowkhamba Sanskrit Series Office. Varanasi. 2, pp. 566-567, 1971; Macdonell, A.A., *Hymns from the R̥gveda*. Oxford U. Pr., London. 1922; Thomas, E.J., *Vedic Hymns*. John Murray, London. 1923; Raja, C.K., *Poet-Philosophers of the R̥gveda*. Ganesh and Co., Pri., Ltd, Madras, pp. 239-42, 1963; Muller, M. Max, tr., *Vedic Hymns*. In *Sacred Books of the East*, 32. 1.1-2 (NOTE: All subsequent translations from the *Sacred Books of the East* series will be abbreviated *SBE*.). Griffith's translation as a prime source of citations is considered by some to be less accurate than more recent translations in both German and French (See: Geldner, F., 3 Vol., Cambridge, Mass., 1951, and Renou, L., *Etudes Vediques et Panineenes*, Paris, 1-13, 1955-1964).
2. For a discussion of the Prajāpati Creation Myth see Drudy, N., *The Sacrificial Ritual in the Śatapatha Brāhmaṇa*. Motilal Banarsidass, Delhi, Varanasi, Patna, pp. 61-71, 1981. Prajāpati also is identified with Puruṣa, sometimes with Agni, and later in the post-Vedic period with Brahmā.
3. Smith, B.K., *Reflections on Resemblance, Ritual, and Religion*. Oxford U. Pr., New York and Oxford, p. 83, 1989; Macdonald, K.S. *The Brāhmaṇas of the Vedas*. Bharatiya Book Corporation, Delhi, p. 112.
4. Smith, B.K., *Op. cit.*, p. 82, 1989.
5. Olivelle, P., *The Āśrama System*, 1993.
6. As noted by Rao (1978), “A son is called *ṛṇacyuta*, one who removes debts” (*R̥gveda*, 6.61.1). “He delivers his father from the hell called *Put*” (*Manu*, 9.138. This appears to be a linguistic joke, and does not refer to any so-called ‘hell’). Through a son, one conquers the worlds, and through a son's son, he attains immortality” (*Manu*, 9.137) (See Seshagiri Rao, K.L., *Population Ethics: Religious Traditions: Hindu Perspectives*, in Reich, W.T., ed., *Encyclopedia of Bioethics*. Free Press Division

of Macmillan Publishing Co., New York, 3. p. 1270, 1978.

7. Panikkar, R., *The Vedic Experience: Mantramañjarī*. U. of California Pr., Berkeley, Los Angeles, p. 170, 1977.
8. For the ritual aspects of the antenatal saṃskāras see Gopal, R., *India of Vedic Kalpasūtras*. Motilal Banarsidass, Delhi, Varanasi, Patna, pp. 253-64, 1983; Pandey, R.B., *Hindu Saṃskāras. Socio-Religious Study of the Hindu Sacraments*. Motilal Banarsidass, Delhi, Varanasi, Patna, pp. 48-77, 1969; Walker, B., *Hindu World*. George Allen & Unwin Ltd., London, pp. 238-42, 1968; Panikkar, R., *Op. cit.*, pp. 170-77, 1977.
9. Pandey, R.B., *Op. cit.*, p. 48, 1969.
10. The *Atharvaveda* contains an assortment of mantras usually recited for fecundity (3.23), for successful conception (5.25), for the birth of sons (6.11; 6.17), for progeny in general (7.19), for successful pregnancy (6.81), for childbirth (1.11), against premature birth (6.17), for a child born at an unlucky time (6.110), and to guard a pregnant woman from demons (8.6), etc... (Whitney, W.D., *Atharvaveda Saṃhitā*. 2nd Indian Reprint ed., Motilal Banarsidass, Delhi, Varanasi, Patna, 1 and 2, 1971). See also *Rgveda*, 1.684; 3.1.23; and 10.183 for the conception of progeny in general (Griffith, R.T.H., *Op. cit.*, 1. pp. 92 and 318, 1971).
11. *Rgveda*, 10.184. The mantra occurs in several other places such as *Atharvaveda*, 5.25; 6.9.1-2; and 14.2.2. Verses 1 and 2 are incorporated slightly modified in *Atharvaveda*, 5.25, see Whitney, W.D., *Atharvaveda Saṃhitā*. Motilal Banarsidass, Delhi, Varanasi, Patna, 1. pp. 265-67, 1971, See also *Bṛhadāraṇyaka Upaniṣad*, 6:4:21-22, in Hume, R.E., *The Thirteen Principal Upaniṣads Translated From the Sanskrit*. 2nd ed., revised. Oxford U. Pr., Oxford, p. 172, 1968; Deussen, P., *Sixty Upaniṣads of the Veda*. Bedekar V.M. & Palsule, G.B., tr., Motilal Banarsidass, Delhi, Varanasi, Patna, 1. p. 540, 1980; and *Grihyasūtra of Hiranyakeśin*, 1:7:25:1-4, in *SBE.*, 30. 199-200.
12. Bhashagratna, K.K.L., ed., *An English Translation of the Sūsruta Saṃhitā Based on the Oriental Sanskrit Text*. Calcutta, India, 1. pp. xxix-xxx, 1907. Bhashagratna writes that the male seminal fluid "through increased activity within a well-developed uterus will impregnate the maternal egg, and that the impregnated egg due to a process of division will take shape after the pattern of the father." Such an interpretation, however, assumes too much. While Vedic writers could have observed cell division in some fish and amphibian species, it is unlikely that they could have inferred that human development proceeds in a similar manner. It was only in 1797 AD that William Cumberland Cruikshank first discovered ova in the oviducts of rabbits (*Phil., Trans.*, (London), pp. 197-214, 1797). The human ovum was first observed by Karl Ernst von Baer in 1827 AD. (Von Baer, K.E., *De ovi mammalium et hominis genesi* (On the Genesis of the Egg of Mammals and of Man). Leopold Voss, Leipzig, 1827). A complete facsimile may be found in Sarton, G. 'The discovery of the mammalian egg and the foundation of modern embryology'. *Isis*, 16, p. 331 fl., 1931. For an English translation see Meyer, A.W., *Human Generation. Conclusions of Burdach, Döllinger and von Baer*. Stanford U. Pr., Stanford, California, pp. 90-123, 1956.
13. The symptoms of pregnancy according to the *Vaikhānasa Smārtasūtra* are: swelling of the body, weariness of the thighs, dislike of the husband, averseness to food, super-abundance of saliva, roughness of the voice, and quivering of the womb. By such apparent symptoms the husband perceives that "the fruit has been attached by destiny" (*Vaikhānasa Smārtasūtra*, 3.10, in Caland, W., tr., *Vaikhānasa Smārtasūtra*. Bibliotheca Indica Work No. 251. Ramanand Vidya Bhawan, p. 80, 1982).
14. *Rgveda*, 10.162. 1-6, in Griffith, R.T.H., *Op. cit.*, 2, pp. 612-14, 1971.
15. O'Flaherty, W.D., *The Rg Veda*. Penguin Books, p. 292 n.2, 1983.
16. *Vīramitrodaya-Saṃskāra Prakāśa*, 1. p. 172, cited Pandey, R.B., *Op. cit.*, p. 64 n2, 1969. Jastrow (1911) writing about old Babylon claims that "There was even a 'gynecological' demon, known as

- Laḅartu, whose special function was to attack women in childbirth, and steal the offspring..." (Jastrow, M., *Aspects of Religious Belief and Practise in Babylon and Assyria*. New York, 1911, quoted in Wright, J., 'Demonology and Bacteriology in Medicine', *Sci. Monthly*, 4, p. 505, 1917).
17. *Mārkaṇḍeya Purāṇa*, 51. 76-78, in Pargiter, F. Eden., *The Mārkaṇḍeya Purāṇa*, Bibliotheca Indica. Indological Book House, Delhi and Varanasi, p. 264, 1969.
 18. *R̥gveda*, 155. 1-2, in Griffith, R.T.H., *Op. cit.*, p. 643, 1973. It subsequently became a common practice to make "a red mark on the person of the wife to frighten demons" away (*Vīramitrodaya-Saṃskāra Prakāśa*, 1. p. 172, cited by Pandey, R.B., *Op. cit.*, pp. 66-68 n23, 1969).
 19. *Suśruta Saṃhitā*, 3. 8-10, in Acharya, N.R., ed., and Bhisagratna, K.K.L., tr., *Suśruta Saṃhitā*. Chowkhamba Sanskrit Series, Varanasi, India, 3 vols., 1973. See also Bhisagratna, K.K.L., ed., *An English Translation of the Suśruta Saṃhitā Based on the Oriental Sanskrit Text*. Calcutta, India, 3 vols., 1907-1916.
 20. *Vīramitrodaya-Saṃskāra Prakāśa* 1.180, cited by Pandey, R.B., *Op. cit.*, p. 68, 1969.
 21. *Caraka Saṃhitā*, *Śārira*, 7.46. It was generally recognized that the umbilical cord serves a nutritive function prior to birth. It is stated that the embryo is held at the navel (umbilical cord), and it grows without taking food (*Pañcaviṃśa Brāhmaṇa*, 1.306, and *Taittirīya Brāhmaṇa*, 2.1.4.6). Murthy (1970) observes "that there is no effort made on the part of the embryo for taking food and no food is specifically served to it. The food in its final form is assimilated automatically into the system of the embryo direct. The child is nourished of its own accord as it were. The mother is not conscious of the nourishment given to the young one below her heart" (Murthy, R.S.S., *The Brāhmaṇas on Medicine and Biological Sciences*. *Indian J. of Hist. of Sci.*, 5, pp. 80-85, 1970).
 22. *Śatapatha Brāhmaṇa*, 4.5.2.4 and 9.5.1.63, in *SBE*, 26.2.392 and 42.4.273; Basu, J., *India of the Age of the Brāhmaṇas*. Sanskrit Pustak Bhandar, Calcutta, p. 65 n 9-10, 1969. See also *R̥gveda*, 10.184.3, and MacDonell, A.A. & Keith, A.B., *Vedic Index of Names and Subjects*. Indian Texts Series. 3rd reprint edition. Motilal Banarsidass, Delhi, Varanasi, Patna, 1, p. 344, 1967.
 23. *Mārkaṇḍeya Purāṇa*, 11. 7-9 and 16, in Pargiter, F. Eden., *Op. cit.*, pp. 69-70, 1969. See also *Pañcaviṃśa Brāhmaṇa*, 6.1.3 and 6.8.9; *Aitareya Brāhmaṇa*, 1.3 and 11.10. The Hebrew *Babylonian Talmud* makes the observation that the foetus near to the time of delivery, resembles a folded writing tablet: "Its hands rest on its two temples respectively, its two elbows on its two legs and its two heels against its buttocks. Its head lies between its knees, its mouth is closed..." (*Tractate Niddah*, 30b, in Epstein, I., *The Babylonian Talmud. Seder Tohoroth*. Soncino Pr., London, p. 211, 1948). Other unscientific descriptions are provided in *Tractate Niddah*, 31a, and in *Midrash Leviticus*, 14.8 (Israelstam, J. & Slotki, J.J., *Midrash Rabbah. Leviticus*. Soncino Pr., London, 4. p. 185, 1939).
 24. Walker, B., *Op. cit.*, p. 241, 1968. See also Caland, W., *Vaikhānasa Smārtasūtra*, 3.15, Ramanand Vidya Bhawan, pp. 83-84, 1982.
 25. Guttmacher, A.F., quoted in Ellinger, T.U.H., *Hippocrates on Intercourse and Pregnancy*. Henry Schumann Inc., New York, pp. 123-25, n17, 1952.
 26. *Āśvalāyana Gṛhyasūtra*, 1.15. 1-3, and *Pāraskara Gṛhyasūtra*, 1.16.6 and 17, in *SBE*, 29.1.182 and 294-295. *Saṃskāras* were also performed following birth and at intervals throughout life. The *Jātakarma* was followed ten or eleven days later by the *Nāmadheya* or *Nāmakarma* ceremony at which time the child was given a name. The *Niṣkramaṇa* or *Niṣkrama* sacrament was performed when a child was taken out of the house for the first time. Then, in the sixth month, another ceremony called *Annaprāśana* marked the child's first intake of solid food. Even the first haircut was an occasion for a ceremony. Other ceremonies followed such as the *Upanayana* initiation to Vedic studies; the *Vivāha* marriage ceremony; and, at the end of life, a *śrāddha* ceremony for the departed. *Sapindikarana* was the name of a *Śrāddha* performed a year after death and was intended to unite the deceased with his

ancestors (Banerji, S.C., *A Companion to Sanskrit Literature*. Motilal Banarsidass, Delhi, Varanasi, Patna, Bangalore, Madras, 4. pp. 401-69, 1989. Death was not considered final in an ultimate sense, for it was generally held that the *material* seed of the father could be propagated continuously in successive offspring; and it was believed that the *immaterial* soul, at the completion of each cycle, would upon departure enter another material body.

27. *Chāṇḍogya Upaniṣad*, 6.3.1. In Macdonell, A.A. & Keith, A.B., *Op. cit.*, 1, p. 278, 1967.
28. *Aitareya Āraṇyaka*, 2.6; *Vāyu Purāṇa*, 3.22. See Banerji, S.C., *Op. cit.*, p. 715, 1989, and Kapil, R.N., 'Biology in Ancient and Medieval India', *Indian J. of Hist. of Sci.*, 5, pp. 119-40, 1970. The *Anuṣṭi* also states that the mode of living beings is "fourfold," i.e., from eggs, from germs, from perspiration, and from wombs (*Anuṣṭi*, 27, in *SBE.*, 8. 339).
29. *Śatapatha Brāhmaṇa*, 3.2.1.16 and 3.3.3.12, in *SBE.*, 26.2.29 and 73. A King to be consecrated was vested with garments of initiation symbolizing the extra-embryonic membranes of the embryo. He identified himself with the innocence and purity, of an embryo, was ritually reborn, and liberated from inner caul (amnion) and outer caul (chorion), and the womb. See also *Śatapatha brahmana*, 3.1.3.28; 3.1.2.21-28; 5.5.5.20 etc.
30. *Aitareya Brāhmaṇa*, 1.1.1.3, in Keith, A.B., tr., *Rgveda Brāhmaṇas: The Aitareya and Kauṣītiki Brāhmaṇas of the Rgveda*. Lanman, C.R., ed., Harvard Oriental Series, Motilal Banarsidass, Delhi, Patna, Varanasi, pp. 108-9, 1971.
31. Needham (1959) writes that "Structures such as the amniotic membrane are referred to in the *Bhagavadgītā*, "But provides no reference (Needham, J. *A History of Embryology*. Cambridge: U. Pr., Cambridge, p. 225 n4, 1959). The *Bhagavadgītā* states that the foetus is enveloped by the womb. The text conveys the idea that "knowledge" is enveloped by desire in much the same way that "...fire is enveloped by smoke, a mirror by dust, the foetus by the womb..." (*Bhagavadgītā*, 3.43, in *SBE.*, 8.57).
32. *Aitareya Āraṇyaka*, 2.5.1.3, in *SBE.*, 1.243. Of man, the essence is the semen (*Bṛhadāraṇyaka Upaniṣad*, 6.4.1, in Radhakrishnan, S., tr., *The Principal Upaniṣads*. George Allen & Unwin Ltd., London, p. 321, 1953. See also *Aitareya Upaniṣad*, 2.5 and *Aitareya Brāhmaṇa*, 7.13.
33. *Aitareya Upaniṣad*, 2.4.1 See Smith, B.K., *Op. cit.*, pp. 83-84, 1989 *Bṛhadāraṇyaka Upaniṣad*, 2.1.8, in Hume, R.E., *Op. cit.*, pp. 93-94, 1968.
34. *Jaiminīya Brāhmaṇa*, 1.330, and *Aitareya Brahmaṇa*, 30.36. The idea of the two cooperating seeds in the formation of the embryo is also referred to by Aristotle in the *Generation of Animals*, 1.20.729a9-14 (Barnes, J., ed., *The Complete Works of Aristotle*. Revised Oxford Translation. Bollingen Series LXXI. 2. Princeton U. Pr., Princeton, 1, p. 1132, 1984. The same concept appears in *The Wisdom of Solomon, or Booke of Wisdom*, 7:1-2 (*Vulgate*), and in rabbinical writings which refer to the development of form in terms of a curdling or congealing, brought about by an interaction of seeds (*Midrash Rabbah. Leviticus*, 14:9 in Israelstam J. & Slotki, J.J., *Op. cit.*, 4, p. 186, 1939). For a discussion of the doctrine of the "subtle body" see Dasgupta, S., *A History of Indian Philosophy*. University Pr., Cambridge, 2, p. 302-312, 1952.
35. *Āpastamba Sacred Laws*, 2.9.24.2, in *SBE.*, 2.1.159.
36. The male only was thought to produce seed in reproduction (*Aitareya Brāhmaṇa*, 7.13; *Manu*, 9.8, in *SBE.*, 25.329).
37. Walker, B., *Op. cit.*, pp. 238-39, 1968. At p. 239 Walker writes that "the seed, (*bija*)" in a preformational sense, "is a miniature man containing the elements of all the organs of the male, but the *kṣetra* or field i.e., the womb, is also of great importance in the heredity transmitted to the child." The woman only "nourishes his (her husband's) self (the son) within her..." (*Aitareya Āraṇyaka*, 2.5.1.5, in *SBE.*, 1.1.244. See also *Aitareya Upaniṣad*, 2.4.2). This idea is also evident in the early Greek plays by

Aeschylus (ca. 525-455 BC) and Euripides (ca. 480-406 BC) where women are said to provide a protective environment only, and like the soil, contribute nourishment for the growing seed (Aeschylus, *The Eumenides*, 657-661; Euripides, *Orestes*, 553-555), in Grene D. & Lattimore, R., eds., *The Complete Greek Tragedies*. U. of Chicago Pr., Chicago and London, 1, p. 158, and 4, p. 225, 1969. Needham (1959) adds Sophocles, *Antigone*, 1:569 and Lucretius, *De Rerum Natura*, 4:1107, and observes that there is evidence from *Diodorus Siculus* that this doctrine perhaps was of Egyptian origin (Needham, J., *Op. cit.*, pp. 43-44 n3, 1959).

38. *Pañcaviṃśa Brāhmaṇa*, 4.8.3, in Murthy, R.S.S., *The Brāhmaṇas on Medicine and Biological Sciences*, *Indian J. of Hist. of Sci.*, 5, pp. 80-85, 1970; *Manu*, 3.48, in *SBE.*, 25.84. For additional references to sex determination see *Garuḍa Purāṇa*, 2.32.22-23, in Tagare, G.V., tr., & Shastri, J.L. ed, *Ancient Indian Tradition and Mythology*. Motilal Banarsidass, Delhi, Varanasi, Patna, 14, p. 877, and *Garbha Upaniṣad*, 3 and 4, in Deussen, P., *Op. cit.*, 2, pp. 639-644, 1980. For the ceremonial determination of sex see also *Āśvalāyana Gṛihyaśūtra*, 1.7.2-5 and 1.13. 2-5, in *SBE.*, 29-1-167 and 179-180, and *Sāṅkhāyana Gṛihyaśūtra*, 1.5.5-10, in *SBE.*, 29.1.20-21. others held that conception on even days, i.e., four, six and eight days after menses, would result in male offspring, whereas conception on odd days would result in females (Banerji, S.C., *Op. cit.*, p. 695, 1989). That the preponderance of male or female seed deposited determines the sex of the developing child was also held by Democritus (See Aristotle, *Generation of Animals*, 4.1.764a7. In Barnes, J., ed., *Op. cit.*, 1, p. 1182, 1984). Empedocles believed that temperature, among other things, contributes to sex determination and parental resemblance (Empedocles. *Fragments* 65 and 67, in Leonard, W.E., tr., *The Fragments of Empedocles*. Open Court Publ. Co., La Salle, Illinois, pp. 38-39, 1973). He furthermore claimed, as did most of the ancients, that sex determination may be influenced by a woman's imagination at the moment of conception.
39. Banerji, S.C., *Op. cit.*, p. 694, 1989. For the ceremonial determination of other characteristics such as skin colour and intelligence see *Bṛhad-āraṇyaka Upaniṣad*, 6.4.14-18, in *SBE.*, 15.2.219-220. Suśruta states that the hard parts of the body are derived from the father and the soft parts from the mother. A very similar claim was made by the ancient Hebrews who believed that the father "supplies the semen of the white substance out of which are formed the child's bones, sinews, nails, the brain in his head and the white in his eyes," and the mother "supplies the semen of the red substance out of which is formed his skin, flesh, hair, blood and the black of his eyes" (*Niddah*, 31a in Epstein, I., *Op. cit.*, p. 214, 1948; *Midrash Leviticus*, 14:9. In Israelstam J. & Slotki, J.J., *Op. cit.* 4, p. 186, 1939). The compilers of the *Talmud* provided a theological dimension by adding that God, the third partner, is He who contributes "sense" and "movement," the very evidence of which, according to Aristotle, made it wrong, or unlawful, to procure a miscarriage (Aristotle, *Politics* 7.16.1335b24-25, in Barnes, J. ed., *Op. cit.*, 2, p. 2119, 1984).
40. *Śatapatha Brāhmaṇa*, 6.3.1.22 and 7.4.1.1, in *SBE.*, 41.3.197 and 362. Additional references on linear descent are provided by Hammett, F.S., *Heredity Concepts of the Ancient Hindus*, *Sci Monthly*, 27, pp. 452-55, 1928, and by Coonen, L.P., *Protophenetics from Adam to Athens*, *Sci. Monthly*, 83, pp. 57-65, 1956. Hammett refers to the *Laws of Manu*, 9.35-40, in *SBE.*, 25.333-334; as well as to *Saddharmapuṇḍarīka*, 21.5.15; *Śatapatha Brāhmaṇa*, 1.4.2.4 and 1.5.3.16, in *SBE.*, 12.1.116 and 149; and *Āpastamba*, 2.9.24.1, in *SBE.*, 2.1.159. Coonen refers to Ragozin, A.A., *Vedic India*. Unwin, London, p. 371, 1895.
41. *Śatapatha Brāhmaṇa*, 6.1.3.20, in *SBE.*, 41.3.161.
42. *Garbha Upaniṣad*, 3 and 4, in Deussen, P., *Op. cit.*, 2, pp. 639-644, 1980. For other versions see *Garbha Upaniṣad*, 3 and 4, in Subrahmanian, N.S., *Encyclopaedia of the Upaniṣads*. Sterling Publ., New Delhi, Jalandhar, Bangalore, pp. 148-51, 1985; Dasgupta, S., *Op. cit.*, 2, p. 312 n. 3, 1952; and *Anandāśrama Sanskrit Series*, 29, pp. 161-162, 1895.
43. Winternitz, M., *A History of Indian Literature*. Russel and Russel, New York, p. 241, 1924.

44. *Yājñavalkya Smṛti*, 3.4.70-108, in Gharpure, J.R., *The Collection of Hindu Law Texts*, 1940; Choudhury, M., *The Embryonic Development and the Human Body in the Yājñavalkya Smṛiti*, *Indian J. of Hist. of Sci.*, 1, pp. 52-60, 1967. For *Caraka Saṃhitā* see Priyaranjan. R. & Gupta H.N., *Caraka Saṃhitā*. National Institute of Sciences of India, New Delhi: India Publication, New Delhi, pp. 9-10; and *Caraka Saṃhitā*, Mehta, P.M., ed., and translated by the Shree Gulabkunverba Ayurvedic Society, Jamnagar, India, 6 vols. 1949.
45. Suśruta, *The Suśruta Saṃhitā*. Bhisagratna, K.K., tr., The Chowkhamba Sanskrit Series. 30. Chowkhamba Sanskrit Series Office, Varanasi, India, 2, pp. 137-41, 1963. See also *Suśruta Saṃhitā*, Śārīrasthāna, 3. 299-301, quoted by Lipner, J.J., *The Classical Hindu Views on Abortion and the Moral Status of the Unborn*. In Coward, H.G., Lipner, J.J. & Young, K.K., *Hindu Ethics. Purity, Abortion, and Euthanasia*. State U. of New York Pr., Albany, New York, pp. 55-56, 1989. See also Dasgupta, S., *Op. cit.*, 2, pp. 314-15, 1952. For insight on generation, heredity, sex differentiation, and prenatal development in Greeco-Roman antiquity see Ellinger, T.U.H., tr., *Hippocrates. On Intercourse and Pregnancy. An English translation of 'On Semen' and 'On the Development of the Child'*. Henery Schumann, Inc., New York, 1952; Littré, E., *Oeuvres Complètes d'Hippocrate*. Paris, 7, 1839-1861; Galen, *On the Natural Faculties and On the Formation of the Foetus*, G. Kuhn, ed., *Opera Omnia*. Leipzig, 1828; and Strato and Diocles as preserved in Macrobius on Cicero's *Somnium Scipionis* (See: Macrobius. *Commentary*, 6.65-75. In Stahl, W.H., tr., *Macrobius. Commentary on the Dream of Scipio*. Columbia U. Pr., New York, pp. 113-115, n68-86, 1952.
46. *Nārada Purāṇa*, 1.32.9-12, in Tagare, G.V., tr., & Shastri, J.L. *Op. cit.*, 15. 1. 413-414.
47. *Ibid.*, 15.1.413-414. At what moment the immortal soul takes up residence in the embryo was a philosophical question as much debated in the Vedic literature as it has in the Judeo-Christian literature. The subject of ensoulment is not dealt with to any extent in this article. Needham (1959) has touched briefly on the subject of "theological embryology" and has provided a brief summary of Pre-existence, Creationism and Traducianism as held by Eastern and Western Fathers of the Christian Church (Needham, J., *Op. cit.*, 95 n. 1, 1959).
48. *Gauḍa Purāṇa*, 2.32. 15-66 in Shastri, J.L., ed., *Op. cit.*, 14, pp. 877-880; *Gauḍa Purāṇa*, 4, in Shastri, M.N.D., tr., *The Gauḍa purāṇa*. Chowkhamba Sanskrit series Office, Varanasi, pp. 10-13, 1968; *Śiva Purāṇa Umasaṃhitā*, 22. 13-43, in Kunst A. & Shastri, J.L., eds. *Ancient Indian Tradition and Mythology*, 3.3.1542-44; *Markaṇḍeya Purāṇa*, 11. 1-21, in Pargiter, F.E., *Op. cit.*, pp. 69-71, 1969; and *Agni Purāṇa*, 369.1-33 and 370.1-19, in Anandasrama Sanskrit Series.
49. Mishra, B.B. Human Anatomy According to the 'Agni Purāṇa', *Indian J. of Hist. of Sci.*, 5, pp. 101-112, 1970. Mishra compares the accounts of foetal development as provided in *Caraka Śārīrasthāna*, 3.12-18; *Suśruta Śārīrasthāna*, 2.28-30; 3.6, 18 and 43; *Aṣṭāṅgasaṃgraha Śārīrasthāna*, 1.199; *Aṣṭāṅgahṛdaya Śārīrasthāna*, 2.1.27 ff., and 3.4-6; *Viṣṇudharmottara*, 2.85.2-3, 2.114.1-7, and the *Agni Purāṇa*, 153.1-2; 369.19-33, and 370.12-21. by the seventh or eighth century AD, a Sanskrit text on medicine was translated in Kashmir into the Tibetan language. The treatise entitled *rGyud bZhi* (four parts) in Tibetan was later abridged by Sangs-rgyas Phun-tshogs and translated into English by the Hungarian Orientalist Alexander Csoma de Köros (1784-1836 AD). Part two, named *Bshad rgyud* (explanatory treatise), gives an account of human embryonic development by the weeks and months (Csoma de Köros, M.A., Analysis of a Tibetan Medical Work. *Journal of the Asiatic Society*, 37, pp. 6 and 7, 1835; Terjek, J., ed., *Collected Works of Alexander de Köros*. Akademiai Kiado, Budapest, pp. 52-53, 1984. See also Norbu, T.J., *The Development of the Human Embryo According to Tibetan Medicine: the Treatise written for Alexander Csoma de Köros by Sangs-rgyas Phun-tshogs.*" In Beckwith, C.I., ed., *Silver on Lapis. Tibetan Literary Culture and History*. Tibet Society, Bloomington, pp. 57-62, 1987. The Tibetan work does not differ significantly from the *Viṣṇudharmottara*, a Kashmirian Vaiṣṇava work likely compiled between ca. 450 and 650 AD, and the later seventh-century Ayurvedic works *Aṣṭāṅgasaṃgraha Śārīra* by Vāgbhata I and *Aṣṭāṅgahṛdaya Śārīra* by Vāgbhata II, i.e., works on which it may originally have been based (Banerji, S.C., *Op. cit.*, pp. 98-

- 99, 134-35, 1989. The Tibetan text refers to the Kanjur's *Nanda Enters the Womb Sūtra* (Dga' bo Mngal 'Jug, Peking Kanjur, 23. 760.13).
50. Bhatta, S. *Nyāyakandaḥ*. Vizianagoram Sanskrit series, 33, 1895, cited in Dasgupta, s., *Op. cit.*, 2, p. 306, 1952.
51. Dasgupta, S., *Op. cit.*, 2, p. 308, 1952.
52. Dasgupta, S., *Op. cit.*, 2, pp. 316-317, 1952; Walker, B., *Op. cit.*, p. 239, 1968.
53. Walker, B., *Op. cit.*, p. 239, 1968. As for stratification, "*Suśruta Saṃhitā* says that as the semen and blood undergo chemical changes through heat, seven different layers of skin (*kalā*) are formed, like the creamy layers (*santānikā*) formed in milk..." (Needham, J., *Op. cit.*, p. 27, 1859).
54. *Aitareya Āraṇyaka*, 2.5.1.2-7, in *SBE.*, 1.1.243-244; and *Aitareya Upaniṣad*, 2.4.2. See also Subrahmanian, N.S., *Op. cit.*, p. 49, 1985.
55. *Tractate Gittin*, 23b. In *The Babylonian Talmud*. Soncino Pr., London, 4, p. 92, 1936.
56. *Tractate Hullin*, 58a and *Tractate Gittin*, 23b, *ibid.*, 2, 1936, and 4, p. 92, n4, 1948.
57. *Jaiminiya Brāhmaṇa*, 1.306; *Taittirīya Brāhmaṇa*, 2.1.4.6.
58. Philo, *The Special Laws*, 3.20.117 and *On the Virtues*, 138, in Colson, F.H., tr., *Philo*. Loeb classical Library. Harvard U. Pr., Cambridge, 7, p. 549 and 8, p. 247, 1950; Plutarch, *Concerning Nature*, 5.15, in Crowell, T.Y. *The complete works of Plutarch Essays and Miscellanies* T.Y. Crowell and Co., New York, 3, p. 119. See also Laale, H. Willer, *Abortion in Greek Antiquity: Solon to Aristotle, Classical and Modern Literature*, 13, pp. 157-66, 1993, and 13, pp. 191-202, 1993.
59. *Digests*, 25.4.1. Ulpianus, *On the Edict*, 24.1, in Scott, S.P., *The Civil Law*. Central Trust Co., Publ., Cincinnati, 6, p. 44, 1973.
60. "Most men," writes Cicero, "seem unequal to the task of murdering a succession of victims one at a time: Oppianicus came as a discovery – the murderer, in a single victim, of more than one person" (Cicero, *Pro Cluentio*, 11.32). Perhaps Ovid borrowed the idea from Cicero, for in the *Metamorphoses*, 2.609, the maid Coronis, mortally wounded by the unerring shaft in her pregnant bosom by jealous Apollo, cries out in agony: "now two of us shall die in one." See also Tertullian, *A Treatise on the Soul*, 37. In Roberts, A. & Donaldson, J., ed., *The Ante Nicene Fathers*. Wm. B. Eerdmans publishing Company, Grand Rapids, Michigan, 3, pp. 217-18, 1973.
61. *Āśvalāyana Gṛhyasūtra*, 1.13.1, in *SBE.*, 29.1.179; *Hiranyakeśin Gṛhyasūtra*, 1.7.25.1g, in *SBE.*, 30.2.200.
62. *Matsya Purāṇa*, 235. Taluqdar A., of Oudh, tr., in Basu, B.D., ed., *The Sacred Books of the Hindus*. Indian Pr., Allahabad, 17.2.258, 1917. The *Institutes of Viṣṇu (Viṣṇu dharmasūtra)*, 24:10-16 refers to abnormal numbers of digits in a hand, such as four or six fingers; and a variety of other physical deviations are referred to either directly or indirectly by reference to traits generally thought to be good (*Viṣṇu Purāṇa*, 3.10.18.22, and *Garuḍa Purāṇa*, 1.63-65). Among the Greek presocratic philosophers, embryos with supernumerary, or deficient parts, were attributed by Empedocles to an excess or deficiency of seminal fluid, to irregular movements at the time of conception, and to a division of the seminal fluid into partly fused, separate, or multiple portions. In the opinion of Democritus, abnormalities were also thought to form as a result of the collision of seeds. Twinning generally was attributed to a separating of the seminal fluid into two portions. The Talmud, too, states that two seeds mixed together contribute to the development of one child and that twins result when a spermatid drop is divided into two (*Yebamoth*, 98b and *Hulin*, 69a, in Epstein, I., ed., *Op. cit.*, 1936 and 1948).
63. *Matsya Purāṇa*, 235. Taluqdar, A. of Oudh, tr., in Basu, B.D., ed., *Op. cit.*, 17.2.258, 1917. See also

Mārkaṇḍeya Purāṇa, 51.76-78, in Pargiter, F. Eden, *Op. cit.*, p. 264, 1969; and *Vīramitrodaya-Saṃskāra Prakāśa*, 1. p. 172, in Pandey, R.B., *Op. cit.*, pp. 67-68, 1969.

64. Gould and Pyle (1956) lists 62 cases of minor terata and the prophetic meanings attached to them by the Chaldaeo-Babylonian diviners of antiquity Gould G.M., & Pyle, W.L., *Anomalies and Curiosities of Medicine*. Julian Pr., New York, pp. 214, 216-17, 1956.
65. Dasgupta, S., *Op. cit.*, 2, p. 309, 1952.
66. *Laws of Manu*, 3.6-10, in *SBE.*, 25.76; and *Institutes of Viṣṇu (Viṣṇu Dharmasūtra)*, 24.10-16, in *SBE.*, 7.107.
67. Regarding infant exposure, Muir (1967) writes that "Mitra and Varuna are prayed to remove the worshipper's sin, as a woman who bears a child secretly puts it away" (Muir, J., *Original Sanskrit Texts on the Origin and History of the People of India, Their Religion and Institutions*. 3rd ed. Oriental Pr., Amsterdam, 5, p. 460, 1967). Griffith (1973) in his footnote to *Rgveda*, 29.1 also observes that the "sin" of "her who bears in secret" means "an unwedded mother (who) abandons her secretly born child in some distant place" (*Rgveda*, 29.1, Griffith, R.T.H., tr., in Shastri, J.L., ed., *The Hymns of the Rgveda*. Motilal Banarsidass, Delhi, Patna, Varanasi, p. 149 n1, 1973).
68. *Kāṭha Upaniṣad*, 1.1.6 and 2.2.7; *Maitri Upaniṣad*, 1.4; *Bṛhadāraṇyaka Upaniṣad*, 4.4.4-6. The concept of soul transmigration of metempsychosis was attributed to the Hindu sage Uddalaka. The Greco-Roman classical literature would suggest that the doctrine may have been Orphic in origin (Pindar, *Fragment*, 127). Pherecydes of Syros (fl. ca. 550 BC), an Ionian prosewriter and possible teacher of Pythagoras, is said to be the earliest to whom the theory of transmigration is attributed (Cicero, *Tusculan Disputations*, 1.16.38). The doctrine was taught by the Pythagoreans (Horace, *Carmina or Odes*, 1.28.10; Empedocle., 375; Pindar, *Olympian Odes*, 2.56 ff). From either source it passed into Platonism (Plato, *Republica*, 10.614d ff., and Virgil, *Aeneid*, 6.713 ff). See Vitsaxis, V.G., *Plato and the Upaniṣads*. Gulab Vazirani, New Delhi for Arnold Heinemann Publ., pp. 74-81, 1977. The doctrine was also found among the early Druids of Northern Europe (Caesar, *Bellum Gallicum*, 6.14.5; *Lucan*, 1.454 ff).
69. *Garuḍa Purāṇa*, 2.3.49-56, 80-82, in Shastri, J.L., ed., *Op. cit.*, 13.2.730-736. The misery of transmigration is conveyed by the Greek historian Herodotus (485-425 B.C.) who writes that the soul (*ātman*) of man. when the body dies: "...enters into the form of an animal into another, until it has circled through the forms of all creatures which tenant the earth, the water, and the air, after which it enters again into a human frame, and is born anew. The period of the transmigration is, they say, three thousand years." (Herodotus, *History*, 2, in Rawlinson, G., tr., *The History of Herodotus*. Tudor Publishing Company, New York, p. 124, 1944).
70. Mankekar, K., *Abortion. A Social Dilemma*. Vikas Publishing House Pvt., Ltd., Delhi, p. 24.
71. *Garbha Upaniṣad*, 2 and 4, in Deussen, P., *Op. cit.*, 2, pp. 639-644, 1980. For other versions see *Garbha Upaniṣad*, 3 and 4, in Subrahmanian, N.S., *Op. cit.*, pp. 148-151, 1985; Dasgupta, A *Op. cit.*, 2, p. 312 n.3, 1952; and *Anandāśrama Sanskrit Series*, 29, pp. 161-62, 1895. The term *vāyu* refers to the air inhaled following birth, i.e., the commencement of human breath.
72. *Nārada Purāṇa*, 1.32.9-12, Tagare, G.V., tr., in Shastri, J.L. ed., *Op. cit.*, 15. 1.413-414; *Mārkaṇḍeya Purāṇa*, 11.13-20, in Pargiter, F. Eden, *Op. cit.*, p. 70, 1969. The epigenesis of consciousness is referred to by Nagasena in *The Question of King Milinda*. Nagasena notes that an embryo passes through *four stages*, and that "a man, at any one moment, is precisely all that he is then conscious of. The phase of his self-consciousness, the totality of that of which he is conscious, is always changing; and is so different at death from what it was at birth that, in a certain sense, he is not the same at the one time as he was at the other. But there is a continuity in the whole series; a continuity dependent on the whole body. And this fits the simile, in which the lamp is the body, and the flame the changing self-consciousness" (*The Questions of King Milinda*, 2.2.1 (40), in *SBE.*, 35. 64-65, n.

- 1). On the four stages see also *Jātaka*, 4.496, and *Samyutta*, 10.1.3.
73. Plato, *Republic*, 10B.614-621. For the reference to the *Talmud* see Urbach, E.E. *The World and Wisdom of the Rabbis of the Talmud: The Sages*. Harvard U. Pr., Cambridge, Massachusetts, pp. 246-48, 1987.
74. *Aṅgūtā*, 36, in *SBE*, 8.389. For additional reference to expiation for the killing of an embryo see *Rāma-Uttara-Tāpanīya Upaniṣad*, 2, and *Nṛsimha-Pūrva-Tāpanīya Upaniṣad*, 5.4, in Deussen, P., *Op. cit.*, pp. 881-82, 1980.
75. Unrepenting sinners were assigned to a variety of hellish regions and reborn in a variety of *yonis*. "If born as a human being he becomes hunch-backed or a dwarf or a *cāndāla* in wretched *yonis*. The sinner is born again and again and dies again and again till he has exhausted his sin and acquired virtue" (*Grauḍa Purāṇa*, 2.380-84, in Shastri, J.L., ed., *Op. cit.*, 13, pp. 27-35).
76. *Manu*. 11.87-88. It was said that Indra having slain many demons was saved from that sin by reason of the mystery of self-knowledge, or truth. Consequently, by that mystery one obtains "the removal of all sorts of sins arising from matricide, patricide, foeticide and theft" (*Kauṣītaki Upaniṣad*, 3.1, Vidyarnava, R.V.S.C., tr., in Basu, B.D., ed., *The Sacred Books of the Hindus*. AMS, Pr., New York, 31.1.48-49, 1974; Hume, R.E., tr., *Op. cit.*, p. 321 n8, 1968). See also *Rāma-Uttara-Tāpanīya Upaniṣad*, 2, in Deussen, P., *Op. cit.*, p. 831, 1980.
77. *Rāma-Uttara-Tāpanīya Upaniṣad*, 2, in Deussen, *Op. cit.*, p. 831, 1980.
78. Sivaswamy Aiyer, P.S., *Evolution of Hindu Moral Ideals*. Nag Publishers, Delhi, pp. 118-24, 1976. Asoka (269-232 BC), who nearly succeeded in becoming ruler of all India, accepted the teachings of the Buddha and was especially anxious to end the killing of animals (First Rock Edict in *Sources of Indian Tradition*, 148, cited in Embree, A.T., ed., *The Hindu Tradition*. Modern Library, New York, pp. 114-15, 1966).
79. *Śatapatha Brāhmaṇa*, 3.4.1.2; *Śāṅkhyāyana Gṛhyasūtra*, 2.15.2.
80. *Gautama*, 17.3.27-31, *Āpastamba*, 1.5.17.29-39, *Baudhāyana*, 1.5.12.6, and *Vasiṣṭha*, 14.39.45. *Manu*, as well, would appear to have permitted the eating of animal flesh as part of the sacred rites (*Manu*, 4.250; 5.27-36). Aiyer (1976) additionally refers to *Śatapatha Brāhmaṇa*, 3.4.1.2 and *Śāṅkhyāyana Gṛhyasūtra*, 2.15.2 (See Sivaswamy Aiyer, P.S., *Op. cit.*, pp. 120-24, 1976). It should be noted that while medical writers of ayurvedic texts from about 500 BC until the end of the first millennium AD approved of meat-eating, other such as the authors of the legal and religious dharmaśāstra texts probably did not.
81. The Vedic hymns divide humanity into four descending *varṇas* (categories): *Brāhmins* (priests); *Kṣatriyas* (warriors and rulers); *Vaiśyas* (merchants and husbandmen); and the lowest caste, the untouchable *Śūdras* (menial workers and artisans) (*Chāndogya Upaniṣad*, 5.10.7). The system of *varṇa* was codified in the *Laws of Manu*, which determined the relations between castes (*Manu*, 1.31 and 10.4, in *SBE*, 25. 13-14 and 402). Additional sub-castes developed within the *varṇa* framework. The Greek philosopher Plato in the *Republic* similarly divided society into three classes or castes, the Guardians (rulers of *Logistikon*), Warriors (*Thymoides*), and Craftsmen (*Epithymitokon*) (See Vitsaxis, V.G., *Op. cit.*, pp. 83-86, 1977).
82. *Āpastamba's Aphorisms*, 1.7.21.7-8, in *SBE*, 2.1.74. *Āpastamba* 1.9.7-8, and *Gautama* 22.13 call him "accursed" (*Abhiśasta*) "who has destroyed an embryo of a *Brāhmaṇa*, even though its sex be undistinguishable" (*SBE*, 2.1.80 and 2.1.284). The term *bhrūṇahan* is used to describe one who "kills a *Brāhmaṇa*, or destroys an embryo (the sex of) which is unknown" (*Vasiṣṭha Dharmaśāstra*, 20.23, in *SBE*, 14.105). The term *abhiśasta* was used for the murderer of a *Brāhmaṇa*, the murderer of a woman undergoing purification (*Atreyi*), the murderer of a person of the *Brāhmaṇa* of *Kṣatriya* caste, and the murderer of the foetus of a *Brāhmaṇa* (Banerji, S.C., *Op. cit.*, p. 402, 1989. See also *Institutes*

- of Viṣṇu, 36.1 in *SBE.*, 1.133-134, and *Manu*, 11.87-88, in Hopkins, E.W., ed., *The Ordinances of Manu*, 2ns ed., Burnell, A.C., tr. Oriental Book Reprint Corporation, New Delhi, p. 336, 1971).
83. *Gautama's Institutes*, 21.9. in *SBE.*, 2.1.281.
84. *Nārada*, 12.92, in *SBE.*, 33.1.183-184.
85. *Vasiṣṭha Dharmasāstra*, 28.7, in *SBE.*, 14.2. 133-134.
86. For references on the subject of "Bhṛūṇa-han" (slaying an embryo) and "Bhṛūṇa-hatyā" (the slaying of an embryo) see Macdonell A.A. & Keith, A.B., *Op. cit.*, 1, p. 391 n. 5, and 2, pp. 114-15, 1967.
87. *Atharvaveda*, 8.6.112-13, in *SBE.*, 42.165 and 521-527 (commentary). For an exposition on the scapegoat of the gods in relation to *Atharvaveda*, 6.112-113 see also Bloomfield, M., the Interpretation of the Veda, *J. of Phil.*, 17, pp. 430-37, 1896. Of peripheral interest is the observation that the French Protestant theologian and reformer John Calvin (1509-1564 AD), two millennia later, similarly should have declared induced abortion a crime for which there could be no atonement, or expiation. With finality Calvin writes that: "if some woman expels the foetus from her uterus with drugs, it is considered an *inexpiable crime*..." By "inexpiable crime," Calvin meant a crime for which there is no scapegoat to unload guilt (Calvin, J., *Commentaries on Genesis*, 38:10, in Hilgers T.W. & Mall, D., eds., *New perspectives on Human Abortion*. Aletheia Books, U. Publ. of America, Frederick, Maryland, p. 384 n56, 1981; and Grisez, G.G., *Abortion: The Myths, the Realities, and the Arguments*. Corpus Books, New York and Cleveland, p. 157, 1970).
88. Aśvatthāman of the Kauravas sought revenge for the slaying of his father by the Pāṇḍavas. He attacked the camp of the latter killing all but seven survivors. The Pāṇḍavas in turn retaliated. With *brāhmaṣira* weapons Arjuna of the Pāṇḍavas and Aśvatthāman confronted each other with raised weapons. Being pacified by Nārada and Vyāsa, Arjuna recalled his weapon. Aśvatthāman, however, failed to do so and diverted it by sending it into the wombs of the Pāṇḍava women, thus killing the Pāṇḍava heirs (Katz, R.C., *Arjuna in the Mahābhārata*. U. of South California Pr., pp. 249-51, 1989; Ganguli, K.M., *The Mahābhārata of Kṛṣṇa Dwaipāyana Vyāsa*. 3rd edition. Munshiram Manoharlal Publishers Pvt. Ltd., 7, pp. 33-38, 1974 (*Sauptika Parva*, 7.14-16) and 12.115-122 (*Āswamedha Parva*, 12.65-69). The slain Parikshit, the unborn son of Ūttara and Abhimanyu, and heir to the Pāṇḍavas, was subsequently restored to life by Kṛṣṇa.
89. Genesis, 38.9-10. The tractate *Niddah* of the *Babylonian Talmud* observes that one who discharges "semen in vain deserves death," and is as one who would "shed blood" (*Niddah*, 13a). The protestant theologian John Calvin refers to Onan's act as a "violent abortion of his brother's offspring" (Calvin cited by Grisez, G.G., *Op. cit.*, p. 157, 1970. Just as Onan was told to raise up seed on behalf of his departed brother Err, so too the ancient Hindus, allowed a childless widow to bear children from the brother of her deceased husband (*Manu Smṛti*, 9.59, in *SBE.*, 25. 337). Philo in *De Specialibus Legibus*, 3.36 writes: "Those persons who make an art of quenching the life of the seed as it drops stand condemned as the enemies of nature. The Parsi *Pahlavi* text also refers to the practice as "demoniacal" and states that "He who is wasting seed makes a practice of causing the death of progeny; when the custom is completely continuous, which produces an evil stoppage of the progress of the race, the creatures have become annihilated...." (*Deadistan-I-Dinik*, 77.11, in *SBE.*, 18.2.227).
90. *Viramitrodaya-Sumskāra Prakāśa*, 1, in Pandey, R.B., *Op. cit.*, p. 52, 1969.
91. *Bṛhadāranyaka Upaniṣad* states: "Now the woman whom one desires with the thought) 'may she not conceive,' after inserting the member in her...he should first inhale and then exhale and say, 'with power, with semen I reclaim the semen from you.' Thus she comes to be without semen (seed)" (*Bṛhadāranyaka Upaniṣad*, 6.4.10 in Radhakrishnan, S., *Op. cit.*, p. 324, 1953). Both Roy (1966) and Dash and Basu (1968) refer to a variety of surgical, herbal, and dietary birth-control measures described in *Atharvaveda*, *Bṛhadāranyaka Upaniṣad*, *Kauṣika Sūtra*, *Garuḍa Purāṇa*, and also in the later literature (Roy, M., *Methods of Sterilization and Sex-determination in the Atharva-Veda and in*

- the *Bṛhadāranyaka Upaniṣad*," *Indian J. of Hist. of Sci.*, 1, pp. 91-97, 1966. See also Seshagiri Rao, K.L., *Op. cit.*, 3, p. 1271, 1973).
92. Dash, B. & Basu, R.N., Methods for Sterilization and Contraception in Ancient and Medieval India, *Indian J. of Hist. of Sci.*, 3, pp. 9-24, 1968.
93. *Parāśara-Smṛti*, 4.14-15. A refusal to grant the husband his desire could lead to very unpleasant consequences. "He could try to buy her (with presents)," but, "If she still does not grant him his desire he should beat her with a stick or his hand and overcome her (saying) with (manly) power and glory, 'I take away your glory.' Thus she becomes devoid of glory" (*Bṛhadāranyaka Upaniṣad*, 6.4.7, in Radhakrishnan, S., *Op. cit.*, p. 323, 1953). The text may have had some unknown ritualistic significance, and it is possible that the acts of resistance and violence may have been symbolic only.
94. *Baudhāyana Dharmaśāstra*, 4.1.12-13, in *SBE.*, 14.2.314.
95. *Śatapatha Brāhmaṇa*, 3.1.2.21, in *SBE.*, 26.11.
96. *Śatapatha Brāhmaṇa*, 9.5.1.62, in *SBE.*, 43.272.
97. *Suśruta Saṃhitā*, 2.8.9. By contrast, spontaneous abortion is defined by Aristotle as follows: "What is called effluxion is a destruction of the embryo within the first week, while abortion (spontaneous) occurs up to the fortieth day; and the greater number of such embryos as perish do so within the space of these forty days" (Aristotle, *Historia Animalium*, 7.3.583b12-14, in Barnes, J., ed., *Op. cit.*, 1, p. 914, 1984).
98. *Suśruta, The Suśruta Saṃhitā*. Bhishagratna, K.K., tr., *Op. cit.*, 2, pp. 58-60, 1963. Similar instructions are given in the *Baudhāyana Piṭṛmedha Sūtra*, 2.15, and in the *Vaikhānasa Gṛhyasūtra*, 7.4. In Somadeva's *The Ocean of Story*, a collection of tales written between 1063 and 1082 AD, the celestial female Vindumati instructs the fisherman Saktideva that he must marry another wife, and "in the eighth month of her pregnancy must cut her open and take out the child..." The explanation provided by N.M. Penzer is that the tale is based on fact, for "in Bombay, when a woman dies in pregnancy...her husband...cuts her right side with a sharp weapon and takes out the child. Should it be alive, it is taken home and cared for; should it be dead, it is then and there buried" (Tawney, C.H., tr., *The Ocean of Story*. Motilal Banarsidass, Delhi, Varanasi, Patna, 2, p. 229 n.2). See also Brothwell D. & Sandison, A.T., *Diseases in Antiquity. A Survey of the Diseases, Injuries and Surgery of Early Populations*. Charles C. Thomas Publ., Springfield, Illinois, p. 504, 1967.
99. *Suśruta, The Suśruta Saṃhitā*. Bhishagratna, K.K.L., tr., *Op. cit.*, 2, pp. 55-57 and 404-408, 1963; Sarton, G., *Introduction to the History of Science*. Robert E. Krieger Publ., Co., Huntington, New York, 1, p. 77, 1975. Similar operations were performed well before the time of *Suśruta*, for the Roman monarch Numa Pompilius (ca. 716-673 B.C.), is known to have prohibited the burial of a pregnant woman before the living child could be extracted from the womb. He held that anyone in violation of that law should be deemed "...to have violated the child's expectancy of life..." (Keith, A.B., *The Religion and Philosophy of the Veda and Upaniṣads*. In Lanman, C.R., ed., *Harvard Oriental Series*, 32. Harvard U. Pr., Cambridge, Massachusetts, Appendix F, p. 627 n 5, 1925. See also *Numa Pompilius*, 12, in Johnson, A.C., Coleman-Norton, R.P. & Bourne, F.C., *Ancient Roman Statutes*. U. Texas Pr., 2, pp. 4 and 6, n.17, 1961. The *Digests of Justinian*, 11.8.2 reads that anyone in violation of that law: "...is held to have destroyed the prospects of the offspring being alive when he buried the pregnant mother." See also Laale, H. Willer, *Abortion in Roman Antiquity: Monarchy to Early Empire*. In *Classical and Modern Literature*, 13, pp. 298-307, 1993, and 14, pp. 25-42, 1993.
100. Tertullian, *A Treatise on the Soul*, 35, in Roberts, A. & Donaldson, J., ed., *The Ante-Nicene Fathers*. Wm. B. Eerdmans Publ. Co., Grand Rapids, Michigan, 3, p. 206, 1973.
101. Parallel ideas regarding medical and biological science may have been derived from the same ancient source. Needham (1970), observes: "Though the earliest expressions of these ideas in their simplest

- form occur in the Vedic literature...it seems overwhelmingly probable that their origin was Mesopotamia. From Babylon they would have radiated to the south-east and north-east as well as to the west” (Needham, J., *Science and Civilization in China*. Cambridge U. Pr., 4.1. p. 135, 1970).
102. Montagu, M.F.A., Embryological Beliefs of Primitive Peoples,” *CIBA Symposia*, pp. 994-1008, 1949. Obstetrics is as old as human procreation and ideas about the process whereby a child comes to see the light of day must have existed from the earliest times.