ALTERATION OF GENERATIONS IN HUMANS

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The move to the forefront of questions of birth control, abortion, and world population has created widespread public interest in a subject which has long been controversial: at what point in life cycle does the new human individual come into being? The question is generally considered to be in the realms of theology and law, where religions and legal codes have variously set the date as at fertilization, quickening, birth, and perhaps other points. There has never been agreement.

As this is a biological problem, I think it deserves to receive more critical thought from biologists. Garrett Hardin has developed a logical argument for the view that the zygote is not a human being and is almost valueless. However, few other biologists seem to have addressed themselves to this question in recent years.

As with all other questions of delineation in biology (e.g., plant or animal, living or nonliving, species or subspecies?), human development is a continuum and any choice of a starting point for the new individual is arbitrary. One could choose any point from follicular development to several months after birth and develop a logical argument for that point as the beginning of the new person. However, certain biological facts are needed for an intelligent evaluation of the problem.

The nonbiologist often tends to consider the unfertilized egg of little consequence and no potential until united with a sperm. He does not realize that the life cycle of man, like that of all other higher organisms, consists of an alteration of generations, one haploid (N) produced asexually and the other diploid (2N) produced by sexual combination.

To some zoologists reproduction means the asexual production of specialized individual reproductive cells. For example, a paper on reproduction in the male squirrel would deal with spermatogenesis. Reproduction in the female is oogenesis. Fertilization and ensuing events I generally consider as development. I consider the new individuals to be sperm and egg. Anyone who has watched human sperm through the microscope must be impressed with these little people of the alternate generation, each going his independent way. They are alive, they are individuals, and they are human. Therefore, are they not entitled to the same constitutional rights as all the rest of us? I consider them to be human life no less sacred than the early conceptus, and more impressive in their behavior and independence.

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But what about the potentiality of the early conceptus? Sperm and eggs are each destined to perish as unicellular organisms, whereas the fertilized egg can develop into a multicellular 2N individual with a soul, mind, and spiritual characteristics. Religions and laws which consider that man’s life begins at conception generally consider the soul as entering the body at that time. Theologians have told me they thought the sperm’s set of chromosomes to be necessary for the development of man.

But the egg has a complete set (N) of chromosomes. Why need another? Sexual reproduction doubtless evolved because of the advantage to the species of having the genetic plasticity offered by recombination. The process of meiosis must have evolved simultaneously to allow the organism to return to its normal (N) chromosome number after sexual combination. There is little doubt that N was the basic chromosome number. The early sexual pattern persists among some fungi where the only 2N cell is the zygote, and fertilization is followed by meiosis. The shift of meiosis from this stage of life cycle to gametogenesis doubtless occurred because of the advantages of having a spare set of chromosomes. The extra set provides for greater genetic diversity and plasticity in allowing the accumulation of recessives and the expression of various combinations. It also allows the survival of small deficiencies and other recessive lethals when paired with normal loci from the other set. The accidental accumulation through the millennia of these deleterious genetic factors has virtually eliminated the possibility that an unfertilized egg of a normally diploid animal in the wild population will develop into an adult.

Theoretically though, the unfertilized egg of man can develop. It is a cell carrying a complete set of chromosomes and specialized for the function of producing the multicellular generation. It is in a state of readiness to respond to any sufficient stimulus. The stimulus of fertilization serves to release energies already present in the responding cell. The stimulus does not determine the nature of the response, and any number of artificial stimuli can initiate development. Inbreeding over several generations to eliminate harmful recessives and lethals could yield eggs which could undergo normal development.

For the sake of argument, then, suppose the egg in man represents the new individual and that it is no less sacred before fertilization than after. On this basis, a mature woman monthly produces an offspring, each of which is destined to perish unless fertilization should occur. If our moral code advocates protection of the rights of the unborn, then it should urge us to do everything possible to insure the fertilization of every egg produced. We must recognize that man, like all other organisms on earth, has the capacity to produce far more offspring than could possibly survive. The time has come when we must make a value judgment as to where our greater concern lies: with the people now alive or with the potential people of the future? It is simply not feasible for us to consider the people of the alternate generation and the embryo as individuals entitled to the protection of the
laws of society. State laws prohibiting induced abortion by the physician are absurd. Fertilization is not an act of God to be considered as a unique and sacred part of our life cycle. Fertilization is an act of man.