

The Seed and the Earth

The Colonization of Regeneration

by Vandana Shiva

L'auteure analyse les liens entre la colonisation des capacités reproductrices des femmes et les nouvelles technologies de la reproduction ainsi que la colonisation de la régénération des plantes avec l'aide de la biotechnologie et la protection de brevets.

Seeds and the earth are central to the life-support of our planet. The seed symbolizes the biological richness of life in its regenerative power, and the earth symbolizes the living fertility from which all life derives nourishment and growth. Nature's fertility has been represented since ancient times through the symbolism of the earth Mother. The seed and the earth have been perennial symbols for the reproduction of society, of the human species.

Patriarchal world views in all their variation, from the ancient to the modern, from east to west, share one assumption—they are based on the removal of life from the earth, on the separation of the earth from the seed, and on the association of an inert and empty earth with the passivity of the female. The seed and the earth symbolism undergoes a metamorphosis when put into a patriarchal mould; and with it gender relations are restructured. This non-ecological view has formed the basis of patriarchal perceptions of gender roles in reproduction across religions and across ages.

The continuity between regeneration in human and non-human nature that was the basis of all nature-religions has been broken. Human beings have been separated from nature. Creativity is now the exclusive monopoly of men who are seen to be



Winnowing the grain

Photo: Elizabeth Smaller

engaged in "production." Women are engaged in mere "reproduction" or "procreation," and nature has become inert, a mere "resource."

Women as non-creative nature

Woman, earth, mother—these have been the symbols of creation—but not according to patriarchy. For patriarchy, creation takes place *ex nihilo* (to produce where nothing was before, to form out of nothing). Everything else is procreation (to beget, engender, generate, to produce offspring).

Creativity is reserved for God in a male-image. Procreativity is the lot of women, nature, and god as nature personified. As a result, in the patriarchal paradigm, only "god-like" men can aspire to creativity. This

devaluing of regeneration and the relocation of creativity from the regeneration of life to production of industrial commodities simultaneously devalues women and nature.

The assumption that male activity is true creation because it takes place *ex nihilo* is ecologically false. No industrial commodity is "formed out of nothing," no industrial process takes place "where nothing was before." Nature and its creativity is consumed at every level of industrial production—as "raw material," as "energy," for "waste" disposal. The assumption that only such production is truly creative because it produces from nothing hides the destruction that accompanies it. The patriarchal creation boundary allows ecological destruction to be perceived as creation, and ecological regeneration and creation to be per-

ceived as non-creation. This devaluing of regeneration underlies the ecological crises and the crises of sustainability. To sustain life involves, above all, to regenerate life. But in the patriarchal view, to regenerate is *not* to create, it is merely to "repeat."

The assumption of creation *ex nihilo* is also false because no regeneration is mere repetition. Each child born, each plant renewed is a novel and creative experience. Each offspring, while maintaining the continuity of regeneration is "new" and different. This is how diversity is produced and renewed. While no industrial process takes place *ex nihilo*, the creation myth of patriarchy is particularly unfounded in the case of biotechnologies where life forms become the "raw material" for industrial production. Yet creation myths continue to create values that deprive all prior regeneration of value as "pure repetition."

From *terra mater* to *terra nullius*

Constructing nature as lifeless matter was essential to the destruction of all prior value and rights. Non-European societies were viewed as not fully human when Europeans colonized them in a process that will soon be 500 years old. Being animals, the original Australians, Americans, Africans, and Asians possessed no rights as humans. They could, therefore, be ignored as people and exterminated. Their lands could be usurped as "*terra nullius*"—lands empty of people, "vacant," "waste," "unused." The morality of the missions justified the military takeover of resources all over the world to serve imperial markets. In a state of nature, everything is considered worthless as it is not serving human needs—earthly phenomena become valuable only after hu-

man labour and machine technology transform them into useful material.

The making of *terra nullius* (the empty earth) from *terra mater* (the earth mother) is probably the most significant shift induced by modern patriarchy. The reductionist mechanistic metaphor simultaneously creates the measure of value and the instruments for destroying that which it does not value. It creates the possibility to colonize and control every-



Working in the orchards

Photo: Elizabeth Smaller

thing that is free and self-generative. Through reductionist science, technological development proceeds steadily from what it has already transformed and used up, toward that which is still untouched. It is in this sense that the seed and women's bodies as sites of regenerative power are, in the eyes of capitalist patriarchy, among

the last colonies. These sites of creative regeneration are turned into "passive" sites where the export "producers" produce and add value. Nature, women, and non-European people merely provide "raw" material. The devaluation of contributions from women and nature goes hand-in-hand with the value assigned to acts of colonization as acts of development and improvement. Separation, which should be a sign of alienation, is transformed into

a means of ownership and control. The act of removal thus becomes the act of owning, and it is for the ability to remove, separate, and fragment that capital depends on science and science-based technologies. However, ownership through removal and "mixing with labour" denies that *in situ* existence does involve prior labour. There is no clear divide between nature and human labour in the cultivated seed and the human offspring.

The colonization of human regeneration

The process of birth has always been at the centre of all images of creativity and fertility, and the mother has been the source of that creativity. However, old patriarchal beliefs, combined with the new technologies, reinforce the image of women as empty vessels and men as the creators.

When women have children, they are viewed less as sources of human regeneration than as the "raw material" from which the "product," the baby is extracted. In these circum-

stances, the physician rather than the mother comes to be seen as having produced the baby. In the case of IVF, an expert committee sees doctors not only as "enablers" but as "taking part in the formation of the embryo itself."

Whereas the focus was formerly on the mother, and the organic unity of the mother

and the baby, it is now centred on the "fetal outcome" controlled by doctors. Women's wombs have been reduced to mere containers and their passivity has been constructed along with their ignorance. The direct organic bond with the fetus is substituted with knowledge mediated by men and machines.

With the new reproductive technologies, the shift in power from the mother to the doctor, from women to men will be accentuated. Singer and Wells in *Having Babies* have suggested that the production of sperm is worth a great deal more than the production of eggs. They conclude that sperm vending places a greater strain on the men than egg "donation" does on women, in spite of the chemical and mechanical invasion into the woman's body. Further, IVF and other technologies are currently offered for the "abnormal" cases of infertility, but the boundary between normal and abnormal is as fluid as the boundary between nature and non-nature. When pregnancy was first transformed into a medical disease, professional management was limited to abnormal cases, while normal cases continued to be looked after by the original professionals, the midwife. While 70 percent of childbirths were thought normal enough to be delivered at home in the 1930s, 70 per cent were identified as abnormal enough to be delivered in the hospital in the 1950s. As Ann Dakly has stated in *Captured Wombs*, "The wombs of women are containers to be captured by the ideologies and practices of those who do not believe that women can take care of themselves."

An article called "A Revolution in Making Babies" in a recent issue of *Time* magazine describes techniques to cross the "barrier" that menopause poses to pregnancy. The article states that "new

findings suggest that these women may be infertile not because their uterus are too old but because their ovaries are." It systematically interprets the body's rhythms as technological barriers. Crossing these barriers involves fragmenting the organism, in the mind and materially. In fact, reducing organic wholes into fragmented, separable or substitutable parts has been the reductionist way of breaking out of nature's limits.



Destemming apples for wages

Photo: Elizabeth Smaller

The rise of the western medical profession is in essence the rise of male control over women's knowledge and women's bodies. Patriarchal science and patriarchal laws have worked hand-in-hand to establish the control of professional men over women's lives.

Recent work on surrogacy and new

reproductive technologies reveals how women's knowledge, contributions, and rights are being forced to disappear. Women's regenerative capacities have been substituted by doctors as "producers" and rich infertile couples as "consumers." The woman whose body is being exploited as a machine is not seen as the one who needs protection from exploiting doctors and rich couples. Instead, the "consumer" needs protection from the biological mother who has been reduced to a surrogate uterus.

The earlier stages of the patriarchal division of labour and the creation boundary had created a gendered dualism between production and reproduction, creation and procreation, with reproduction and procreation being exclusively female activities. With the new biotechnologies, reproduction too is moving out of women's control. Gena Corea projects that by the year 2050, women:

will be divorced from their own procreative power as we (in our generation) are divorced from our sexuality.... These will be women who, from their earliest days, grew up with the reality of IVF, embryo transfer, surrogate motherhood, artificial wombs, and sex predetermination technology. From childhood, these women will have watched television news reports involving the 'Storage Authority', that is, the board in charge of frozen sperm, eggs, and human embryos.

This, then might be the reproductive consciousness of our daughters in the 21st century: 'Reproduction is a complicated, intellectual and technical feat performed by teams of highly skilled men who use, as raw material for their achievements, the body parts of a variety of interchangeable females.'

The new reproductive technologies allow for new levels of invasion into the processes of childbirth. Yet it is the old metaphor of women as passive vessels that is renewed with the new technologies. Medical developments have simply allowed contemporary scientific rhetoric to reassert an enduring set of deeply patriarchal beliefs that women are passive containers in the renewal of life. This idea of woman as vessel, and the fetus as "created" by the father's seed, and owned by patriarchal right goes hand-in-hand with breaking the organic links between the mother and the fetus which is part of her body.

Recent work on children and the environment has reduced the mother to a factor in the child's environment. And "fetal rights" and "fetal protection policies" tend to treat mothers as the biggest threat to the fetus instead of the very condition for its life. Since women are not unknowing matter, and since their knowledge is often at variance with the knowledge of "medical experts," women's attempts to make decisions about their bodies (and fetuses as an organic part of their bodies) are viewed as a threat, and are therefore criminalized; even though it is the doctor who is often the criminal in insisting on the use of violent invasive technologies against the knowledge of women.

The colonization of plant regeneration

Plant regeneration is based on maintaining the cycles of fertility—in the earth, and in the seed. However, agricultural development in the patriarchal worldview sees cycles of fertility as limits that need to be broken, and sees breaking these limits as symbols of transcendence and power.

Sustainable agriculture is based on the recycling of soil nutrients. This involves returning to the soil part of the nutrients that come from it and that support plant growth. The maintenance of the nutrient cycle and the fertility of the soil is based on this inviolable law of return. The Green Revolution paradigm, however, substitutes the nutrient cycle with linear flows of purchased chemical fertilizers from factories (inputs), and marketed agricultural commodities (outputs). The Green Revolution is essentially based on "mira-

cle seeds" which need chemical fertilizers and which do not produce any "outputs" which could be returned to the soil. The earth is again viewed as an empty vessel which can be filled with irrigation water and chemical fertilizer. The only "activity" is in the "miracle seeds" which transcend nature's own fertility cycles.

However, ecologically, the earth and the soil are not empty, and plant growth of Green Revolution varieties does not take place *ex nihilo* with the seed fertilizer packet. The development of soil diseases and micronutrient deficiencies are indicators of the invisible demands the new varieties are making on the fertility of the soil. The desertification of soils is also an indicator of the broken cycles of soil fertility caused by plant breeding which produces plant outputs only for the market, not for the soil.

The biotechnology revolution robs the seed of its fertility and self-regenerative capacity. Profits and power are behind the invasion into all biological organisms.

Technologies are not a substitute for nature, and they are not able to work outside nature's ecological processes without destroying the very basis of production. Nor can markets provide the only measure of "output" and "yields." The Green Revolution creates the perception that soil fertility is produced in chemical factories, and that agricultural yields are measured only through marketed commodities. Crops like pulses which fix the nitrogen in the soil have therefore been displaced. Millet, which produces high yields from the perspective of returning organic matter to the soil, has been rejected as a "marginal" crop. Biological products not sold on the market but used simply to maintain soil fertility are totally ignored in the cost-benefit equations of

the Green Revolution miracle. They are not purchased, and they are not sold. Yet what is "unproductive" and "waste" in the commercial context of the Green Revolution is now emerging as productive in the ecological context and as the only route to sustainable agriculture. By treating essential organic inputs that maintain the integrity of nature as "waste," the Green Revolution strategy ensures that fertile and productive soils are actually laid waste. The "land-augmenting" technology has proved to be a land-degrading and land-destroying technology. With the greenhouse effect and global warming, a new dimension has been added to the ecologically destructive effect of chemical fertilizers. Nitrogen-based fertilizers release nitrous oxide into the atmosphere which is one of the greenhouse gases causing global warming. Chemical fertilizers have thus contributed to the erosion of food security through the pollution of the land, water, and atmosphere.

While the Green Revolution is based on the assumption of the inert earth, the biotechnology revolution robs even the seed of its fertility and self-regenerative capacities. The colonization of the seed reflects the patterns of the colonization of our bodies. Profits and power are behind the invasion into all biological organisms. There are two major routes to the commodification and colonization of the seed. The first is through technical means, the second through property rights.

The hybridization of seed was an invasion into the seed. It broke the unity of the seed as grain and the seed as means of production. In doing so, it created the opportunity for capital accumulation that private industry needed in order to put down firm roots in plant breeding and commercial seed production. And it became the source of ecological disruption by transforming a self-regenerative process into a broken linear form of supply of raw material and a reverse flow of commodities.

Modern plant breeding is primarily an attempt to remove the biological obstacle to marketing the seed. The seed which reproduces itself stays free, a common resource and under the farmers' control, especially women farmers. The corporate seed has a price and is under the control of the corporate sector or under the control of agricultural research institutions. The

transformation of a common resource into a commodity, of self-regenerative resources into mere "input" changes the nature of the seed and of agriculture itself. Since it robs peasants of their livelihood, the new technology becomes an instrument of poverty and underdevelopment.

The decoupling of seed from grain also changes the status of the seed. From being a finished product, nature's seeds and people's seeds become raw material for the production of the corporate seed as commodity. The cycle of regeneration of biodiversity is therefore replaced by a linear flow of free germ plasm from farms and forests into labs and research stations, and flow of modified uniform products as priced commodities from corporations to farmers. Diversity is destroyed by transforming it into mere raw material for industrial production, which necessarily displaces the diversity of local agricultural practice.

This change in the nature of the seed is justified by creating a framework that treats self-regenerative seeds as "primitive" and as "raw" germ plasm, and the seed that is inert and non-reproducible as a finished product. The whole is rendered partial, the partial is rendered whole. The commoditized seed, however, is ecologically incomplete and ruptured at two levels:

- 1) it does not *reproduce* itself, even though by definition, a seed is a regenerative resource. Genetic resources are thus transformed through technology from renewable into non-renewable resources.

- 2) it does not *produce* by itself. It needs the help of inputs, such as chemical fertilizer. As the seed and chemical companies merge, the dependence on these inputs will increase, not decrease. And whether a chemical is added externally or internally, it remains an external input in the ecological cycle of the reproduction of the seed.

It is this shift from the ecological processes of reproduction to the technological processes of production that underlies the problems of dispossession of farmers and of genetic erosion.

Farmers' seeds are rendered incomplete and valueless by the process that makes corporate seeds the basis of wealth creation. The indigenous varieties, evolved through both natural and human selection, and produced and used by Third

World farmers worldwide are called "primitive." Those varieties created by modern plant breeders in international research centres or by transnational seed corporations are called "advanced" or "elite."

The issue of patent protection for modified life forms raises a number of unresolved political questions about the ownership and control of genetic resources. The problem is that in manipulating life forms, you do not start from nothing, but from other life forms which belong to others—maybe through customary law. Secondly, genetic engineering and biotechnology does not create new genes, it merely relocates genes already existing in organisms. In making genes the object of value through the patent system, a dangerous shift takes place in the approach to genetic resources.

*Just as fetal rights
split the bond
between mother and
child, patent rights
are created to
split the bond
between farmers
and their seed.
Invasion is defined
as improvement.*

Most Third World countries view genetic resources as a common heritage. In most countries, animals and plants were excluded from the patent system until recently, with the advent of biotechnologies. With the new biotechnologies, life can now be owned. The potential for gene manipulation reduces the organism to its genetic constituents. Centuries of ongoing innovation are totally devalued to give reproductive technologies—new boundaries are being drawn between what is nature and what is not nature, what is a right and what is not a right.

The U.S. international trade commission estimates that U.S. industry is losing anything between 100 to 300 million U.S. dollars due to the absence of "intellectual

property rights." If this regime of "rights" being demanded by the U.S. takes shape, the transfer of these extra funds from the poor to rich countries would exacerbate the third world crisis 10 times over.

The U.S. has accused the Third World of "piracy." The estimates provided for royalties lost are 202 million dollars in agricultural chemicals, and \$2,545,000 for pharmaceuticals. However, as the team at the Rural Advancement Fund International has shown, if contributions of Third World peasants and tribals are taken into account, the "pirate" roles are substantially reversed. The U.S. owes \$302 million for royalties in agriculture and \$5.097 million for royalties in pharmaceuticals. In other words, in these two biological industry sectors alone, the U.S. owes \$2.7 billion to the Third World.

It is to prevent the accounting of these debts that the creation boundary is being set up through intellectual property rights. Without it, the colonization of regenerative processes of life is impossible. Yet if this last colony is allowed to be carved out in the name of patent protection, innovation, and progress, life itself will have been colonized. And that colonization will herald the ultimate ecological crisis in which cycles of regeneration are torn apart, and forced into non-renewable linear flows of raw materials and commodities.

The colonization of life will be complete when we allow the technological mindset to colonize our minds and allow technological means to be viewed as ends of human choice. In biotechnology, the science of means is being pushed into the "womb and seed pool" to transform the conception of life itself.

Protection of life in this age of pervasive and invasive technologies requires, above all, that we do not slip into viewing technique and know-how as values and ends in themselves. It requires that we keep alive in us a capacity to make ethical choices about what is good and valuable, and subject technological means to those ethical ends. Else we will have foreclosed our options to celebrate life in its spontaneity, diversity and renewability.

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