

Sexuality and Procreation as a Technical Construction

A teeming throng of people on one of the world's great boulevards—all of these ant-like creatures totally convinced that they freely decide what they are about to do. But a specialist in human biology would maintain that that's all an illusion—they are all walking biochemical machines and not free at all. Rather, they are machines with built-in programs. They proceed along as they have been designed to do, and only a little of what occurs is driven by the conscious mind and a purely decisive act of will. After all, things would be terribly complicated if that were not the case, and every person rushing down that street and each motorist driving his car on it had to consciously consider and carefully monitor each step, each eye movement, every flex of the arm and curl of the finger. No, each person is striving to reach a particular goal, and has some intention or other; the internal program accepts this input as a command and carries out the automatic process triggered thereby. 99.99% of everything that we thus allow ourselves to go through or to be put through is unconscious and by no means controlled by free will. A decision resulting from the exercise of free will may indeed seem to be called upon occasionally, such as when a pedestrian stops at a busy crossing and has to decide whether to first cross to the left and then to the right or to choose the opposite sequence—first straight, then left—in order to reach the corner situated obliquely across the intersection where the bus stop is located for the line he wants to take. If the traffic light or traffic conditions don't take the decision out of the pedestrian's hands, then, of course, his free will can decide whether to go one way or the other. And even then, it's usually just a roll of the mind's dice that makes the pick—purely random, due to one's mood at the moment, and not the result of cool calculation.

In the internal storm of nervous and glandular activity that we call sexuality, the paradox between subjective perception and the objective facts of the matter is driven to the extreme. We are without a doubt marionettes of our hormone chemistry. A control center in the hypothalamus, deep within the cranium, plays out a melody on the keyboard of a few dozen peptide and steroid hormones. These are summoned up like building specifications from the genome and produced in the biochemical machinery of the cell, and then intentionally broken down afterwards. We can see the effects of these "drives" when we observe the rutting behavior of animals—the stallion, for instance, his arteries and vesicles swollen with fluids, driven by the single goal of mounting, under extreme duress, the mare in heat, entering and inseminating her with his unwieldy member. With the coolly objective point of view of the human biologist, we convince ourselves that something similar must be going on within us when sexual arousal comes into play, but it is experienced by us in imagined deliberateness and apparent sublimation. Eros is the essence that has been distilled by the cerebrum as that which we human beings perceive as the chemistry that is also at work within us. We construe as a unique, individual, subjective experience that which is, however, merely the fulfillment of what is prescribed by a certain hormone level. As we draw our next breath, our conscious mind usually dispenses with intervening in the respiration process and leaves the work up to the breathing center; in the case of erotic fantasies, though, it's immediately on the spot, and would have us believe that it was the driving, synthesizing, creative force.

Such power of imagination is a human evolutionary acquisition. It was already pres-

ent tens of thousands of years ago—the erotic drawings on cave walls and the curvaceously modeled female figurines of prehistoric artists (like the Venus of Willendorf) are proof of this. To me, no other archeological finds are as convincing as these Ice Age graffiti, scenes of sexual couplings depicted on ancient Grecian urns, erotic drawings found in the ruins of Pompeii—they powerfully convince me that since time immemorial there have been human beings exactly like men and women of today who have taken that hazy fever in which the awakening bodily functions of sexuality have plunged them and converted it into the creative sublimation of those drives. Dance and music, image and word, bodily gesture and facial expression—in a broadly arching trajectory, the animalistic is transformed into the sensual, and the sensual into the spiritual. Sophocles and Aristophanes, Myron and Praxiteles, Sappho and Ovid, Plautus and Lucian—these names evoke associations that remind us that already thousands of years ago at the very cradle of our culture, men and women wrestled with the unification of higher and lower nervous activity.

And even the technical aspects of this activity are ancient. In great technical detail—almost as an art of engineering—Malanaga Watsjajana describes in the millennium-and-a-half old work *Kamasutra* the sexual gymnastics designed to guarantee ancient Indian playboys and their partners the ultimate refinements of neuronal release, its preparation, prolongation and controlled explosion. But the other aspect of sexuality—the reproduction of the generations—also called for technical mastery even at the dawn of history. At all times except for the late 20th century, and everywhere on earth with the exception of the industrialized nations of the First World—thus, almost at all times and practically everywhere—human beings lived in an ecosystem that was characterized by strictly limited supplies of food, as well as water and salt. It was therefore absolutely imperative, on one hand, to assure human reproduction, but, on the other hand, to limit it to an extent that was compatible with a finite ecosystem. Where war or pestilence or both did not bring about population limitation and thus suspend the requirement to practice birth control, circumstances necessitated coming up with the technical means to do so. All pre-industrial societies separated sexuality from reproduction, though certainly by very primitive means: abortion and infanticide. One would do well to get beyond the illusion that mankind used to live in harmony with God, church and nature, and that it is only lately—with the advent of the pill, birth control, prenatal diagnostics, induced termination of pregnancy and artificial insemination—that cold, impersonal technology has insinuated itself into the intimate sphere. No, it is rather the case that civilization has secondarily set free again a final remnant of uninhibited, natural behavior—this sort of thing was referred to as a Sexual Revolution—though, indeed, only to immediately commandeer it again through the psycho-mechanics at work in media culture and the dictatorship of consumption. Whatever, just no bucolic fantasies, please! It was a matter taken completely for granted in ancient Rome that the father of the family decided whether an infant would be permitted to live or would have to be cast out. In times of need, the worth of a human life was hardly higher in value than that of a litter of kittens, whose members that cannot be disposed of by gift are simply drowned. Even under improved living conditions at later times—in aristocratic circles during the time of absolutism, for example—a process of rational assessment separated sex and procreation. The founding of a family was always subject to strategies of asset maintenance and the expansion of power. Even the noblest of brides was selected with technical considerations in mind—namely, whether she would be suitable to produce offspring—and we can well imagine the technical consultations that went on and the ministrations that were provided when an aristocratic marriage threatened to remain without issue.

Some historical accounts of such efforts have even been passed down to us, though most of this was, of course, hushed up.

These biological processes obey a program that is equipped with a certain degree of freedom, which gives us the impression that we as sentient beings play an essential role in many key decisions. At the end of childhood, the hormone orchestra strikes up and begins to call the tune. Indeed, much has been laid out in advance and a number of factors are already present. Body and soul are prepared, as of course they have to be, just as the instruments have to be in place if the concert is to begin. Sigmund Freud has already filled both body and psyche with sexual fantasies before the hypothalamus sounds the signal for the onset of puberty. Indeed, the sexual hormones must have already gone into action; how else could the primary and secondary sexual characteristics—ovaries, Fallopian tube, uterus, cervix, birth canal, mammary glands, and a number of other parts of the female anatomy—have been prepared to perform their tasks? How else would it be possible to carry out the reprogramming of the female orientation of male organs in the early embryonic stage? We are all females at first; it is not until a few weeks after conception that reconstruction begins on those embryos that have a Y-chromosome in the genome. Thus, some of the male human body's inherent design flaws (such as the tendency to suffer severe ruptures) are attributable to precisely this belated virilization performed by the SRY gene on the "broken-down" Y-chromosome of the male. So even at this early stage, extensive design correction is already going on—an almost-finished statue is resculpted.

The onset of sexual maturation then plunges human beings into profound existential confusion. Of course, even before this phase, most people have become aware—even when Victorian child rearing seeks to keep much of it hidden—of how strongly the behavior of adults is determined by sexuality and procreative functions, but one now experiences for the first time on one's own person how deeply embedded all of this is internally, and what mental turmoil accompanies these physical functions. Awakening sexuality explodes all rational considerations, all instrumental logic. Sexuality and reproduction are separated in one original sense—namely, in that we repress and refuse to acknowledge what a natural function these sensual urges perform. It takes the most sharply worded directives to command or convince human beings to switch on their rational capacities and to systematically employ technical devices like condoms or a rhythm method calendar, or to regularly take hormones to prevent ovulation or the nidation of a fertilized ovum in the uterus. Just one or two generations before the one fruitfully multiplying now, it was only through the use of the most primitive means that it was possible to access this separation (repressed unity) of sexuality and reproduction that certainly was present in human consciousness and to make this operational on the physical level as well, to constantly constrain human beings to switch on rationality where physicality switches it off. The purported Sexual Revolution that broke out around 1970 brought on a sort of physical and mental relief; it was greeted with great expectations, but it did not bring true liberation from the compulsions of hormonally induced behavioral stereotypes.

We now face the question of whether the technological revolution we are now witnessing could decisively alter the way we experience sexuality and deal with the process of reproducing ourselves, or whether the level of technological availability that has already been reached will simply increase. Will we see the enhancement of human existence thanks to technological achievements, better quality of life, and greater manageability of our circumstances in a qualitative sense, and can we assess the cultural consequences of this?

First, as far as the intensification of the sexual performance of our body, of our sensu-

ality, is concerned, this is traditionally achieved through external stimuli along the entry portals set up for this purpose as well as via detours around them. Someone who gets into watching a skillfully made porno flick stimulates light-sensitive and sound-sensitive receptors in the eyes and ears. This releases nerve discharges—signals, that is—which make their way to the corresponding sectors of the cerebrum, where they are synthesized into structured sensations and, in the “feeling centers” of the thalamus, are endowed with the necessary emotional amplification and coloration. The imagination is stimulated, but the excitement and release achieved thereby are not equivalent to those of a natural erotic experience distributed across the entire spectrum of the senses. Real enhancement can be achieved by the use of chemical agents—at least that’s what I hear, since I have no relevant experience to draw upon in this area. For millennia in all cultures, drugs have been used to expand consciousness and heighten sensation; the modern expansions of this range of offerings have brought certain refinements, but mostly just brutalization and intensification. I don’t believe it will be possible to significantly change erotic and sexual experience through chemistry; the approach is not specific enough to do so, since it’s trying to use a chemical shotgun approach, so to speak, in intercourse with an extremely sensitive system. The same applies presumably to the other type of stimulation, the electrical variety. It is well known that our nerve cells build up differences in chemical concentrations, gradients along the cell membranes, gradients of charged molecules that impart to the cell an electrical potential that can suddenly discharge if chemical substances or electrical stimuli produce a short circuit. That is the commonplace principle of all nervous activity, primitive as well as more highly developed. Thus, by means of electrical stimulation, the storm of discharges that accompany sexual activity (in the animalistic as well as in the sublimated sense) can also be triggered and influenced, but intervention of this sort is another example of the sledgehammer approach—the intensification of pleasure is purely quantitative and right on the verge of turning into a painful breakdown. After all, there’s a good reason why electrical stimulation of the nipples and genitals are among the most insidious methods in the arsenal of torture. Whether enhanced performance could be achieved in the future via more precise integration of the sequences of internal and external stimuli—for example, through the detailed interface of computer programs with the neuronal program of our sensory and mental processing—is something that I am unable to predict. My guess is that the cyberworld will hardly be more exciting, and is likely to be more sterile, than the one at hand, and that’s also how it might turn out to be with the increased emotional pleasure to be gained from such experiences. Thus, the sex of this new century will hardly be able to live up to the techno-fetishists’ expectations of brave new worlds. What definitely does have the potential to increase, though, is the bifurcation of our evolutionary heritage—the separation of the functional linkage of sexuality and reproduction. Procreation in the sense of the production of a fertilized ovum that has the potential to become a fully developed human being is already possible in the test tube today. Indeed, the injection of a single sperm cell taken from a donor—a cell that can even display certain defects such as diminishment of motility, which is a precondition for reaching and penetrating the egg cell—into a single ovum taken from another donor, is already a routine procedure for many specialists in reproductive medicine. Thousands of couples that would otherwise have been unable to have children of their own take advantage of such technical means as artificial insemination with subsequent implantation of the resulting embryo into the uterus of the female donor. The children who are born as a result of such an operation display absolutely no sign of artificial, sex-free reproduction; they live among us, unrecognized, and are them-

selves frequently unaware of their own high-tech origins. Furthermore, not only conception but also subsequent embryonic development will be done with technological support. Cell biologists are working on procedures to cultivate embryos (of animals up to now) in artificial womb media. Not too long ago, a leading embryologist told me confidentially over dinner—after which we enjoyed a bit of fine Alsatian wine—that in the not-too-distant future, the frustration felt by many women at being exploited as childbearing machines could become a thing of the past. Already today, mammalian embryos can be kept in test tubes until extremely advanced stages of the division-and-differentiation process. And there is progress to report on the other end as well: in incubators equipped with state-of-the-art gadgetry, fetuses that previously would have had no chance of survival can live even in their 5th and 6th months. The artificial womb will someday replace the natural one. It is obvious that this would mean a completely new construction of the biological function of the human species' genders. Would that actually be socially and morally intolerable? I don't know if I ought to regard this as a catastrophe or as the logically consistent result of a nevertheless ongoing process of civilizational emancipation. Either interpretation is plausible. Women will no longer have to conceive children, nor carry, deliver and suckle them. Does this mean the dissolution of all family and community structures and all of human culture, the end of women's elevated position in the process of reproduction of the human species? Does this mean the final transition to a genderless, sterile cyberworld in which the differentiation between the sexes is reduced to the binary juxtaposition of sword and sheath, of the angular and the curved? Or is it merely the consummation of what fast-track female executives have been up to anyway in all leading-edge sectors of the world of business and public administration? And by the way, consider that this is a lifestyle invented by aristocratic women in 19th-century French and Russian novels, and let us recall that Alexander Pushkin knew his governess better than his mother, loved her more and learned more from her than from that woman imprisoned by the social conventions of the day.

Someday in the distant future, technical intervention in reproduction may extend not only to the process itself but also to the selection of the product. Couples will set up an appointment at the "In a Family Way" fertility and reproduction counseling center, and display their genetic "passport" in which all individual characteristics of the genome are recorded. The computer will calculate the compatibility of the two partners' genomes, and, finally, the genetic equipment of the future child will be selected and ordered just as if they were planning, measuring, designing and paying for a kitchen-remodeling job. Of course, I need not add that the partners don't necessarily have to be of different genders as was the case with old-fashioned stochastic procreation carried out by a roll of the genomic dice. Children of either sex will be able to be produced by any combination of partners; only a lesbian couple would encounter difficulties if—in what might well be a most unlikely scenario—they had their heart set on a baby boy. The two partners would have to round up the missing Y chromosome somewhere and bring it in.

The technical-commercial formulation of sex and reproduction, including their decoupling from one another, is accompanied by a few ancillary conditions, whereby it is presently unclear whether they will make the whole deal unattractive.

One such undesirable side effect is the upshot of the complexity trap. It will certainly be possible to determine a prospective child's eye or hair coloration with a certain amount of exactitude, but there remains a degree of potential, randomly generated disruption. Furthermore, haven't contact lens engineers and pigment chemists long been doing precisely what is desired here? And what's more, in a form that can be

taken back to the store and exchanged? To get one's torso to resemble the magnificent build of a Greek god, isn't a much more reliable method a combination of bodybuilding equipment, cosmetic oil treatments and invigorating hormone tablets? Even if science would ultimately succeed in genetically determining such complex traits as perfect pitch or an extraordinary memory for numbers—about which I harbor considerable doubts—what good is that to us if the child produced thereby makes stubborn use of his or her free will, doesn't give a damn about music or mathematics, and prefers to become a fashion designer or a drug dealer? Squandering one's aptitudes and talents, coming under the influence of the wrong crowd, and most ungratefully refusing to accede to social pressures and the wishes of one's progenitors—these are not genetic but rather culturally determined traits. The genetic engineering of human offspring could well prove to be just like playing the lottery, which producing offspring already is today.

I expect the second side effect to result from the internal incompatibility of the technical manipulation of sex and reproduction. It is the coldness of this consummately technical process that makes it unattractive. Undergoing artificial fertilization today means submitting to a medical operation that is painful and by no means without danger. For weeks beforehand, the woman must take hormone tablets to stimulate the development of the ovum, and then submit to some torturous procedures on the gynecological rack. The man must masturbate and collect his semen in a petri dish; if he's unable to do so (not everyone is capable of masturbating on command) or the product does not meet quality standards, the doctor comes with his long needle, sticks it into the testicles and extracts the immature precursor cells, which then undergo a maturation process regulated by genetic technology. As long as a woman is still required to carry an optimized early-stage embryo (as already mentioned, there might be a way to get around that), she must continue to take hormones and once again take her place on the rack, where the embryo is then implanted inside her. I don't even want to go into all the necessary follow-up procedures and subsequent check-ups; let's just say that root canal work is a pleasure compared to what all those partners in procreation with their faith in technology have to go through. Sometimes, I look around in a lecture hall full of students and ask for a show of hands from all those who would be happy to go along on such a journey. Whether shyness or cowardice or deep insight or sheer laziness dictates their response, all of them remain grinningly by the conviction that sticking to nature's way of bringing forth new human beings is to be preferred. I still don't see how all this new technology plans to succeed in providing pleasure. Without pleasure in a society in which raising children does not constitute an act of necessity in retirement planning or regulating succession? This is supposed to gain acceptance? I'm too old-fashioned to be able to imagine such a thing.

Perhaps the wrong author was commissioned to write this essay. In any case, I predict that, in the foreseeable decades, there will indeed be no lack of techno-sex idiots and offspring-selection fools, but the natural interplay of sexuality and reproduction has been so optimally designed by millions of years of evolution that engineering hasn't got a chance to optimize it any further. I'll bet a case of champagne on that, and I hope to be here in 30 years when the bet is settled to give a complete account of why things turned out the way they did.