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Chapter 1 : Top shelves for Biotechnics and Society

Biotechnics and Society has 5 ratings and 0 reviews. Impacts of technological change have historically been assessed only after the passage of a signific.

Indeed, the cultivation of plants may be viewed as the earliest biotechnological enterprise. Agriculture has been theorized to have become the dominant way of producing food since the Neolithic Revolution. Through early biotechnology, the earliest farmers selected and bred the best suited crops, having the highest yields, to produce enough food to support a growing population. As crops and fields became increasingly large and difficult to maintain, it was discovered that specific organisms and their by-products could effectively fertilize , restore nitrogen , and control pests. Throughout the history of agriculture, farmers have inadvertently altered the genetics of their crops through introducing them to new environments and breeding them with other plants â€” one of the first forms of biotechnology. These processes also were included in early fermentation of beer. In brewing , malted grains containing enzymes convert starch from grains into sugar and then adding specific yeasts to produce beer. In this process, carbohydrates in the grains broke down into alcohols, such as ethanol. Later, other cultures produced the process of lactic acid fermentation , which produced other preserved foods, such as soy sauce. Fermentation was also used in this time period to produce leavened bread. Darwin added to that body of work with his scientific observations about the ability of science to change species. In selective breeding, organisms with desirable characteristics are mated to produce offspring with the same characteristics. For example, this technique was used with corn to produce the largest and sweetest crops. In , Chaim Weizmann first used a pure microbiological culture in an industrial process, that of manufacturing corn starch using Clostridium acetobutylicum , to produce acetone , which the United Kingdom desperately needed to manufacture explosives during World War I. In , Alexander Fleming discovered the mold Penicillium. His work led to the purification of the antibiotic compound formed by the mold by Howard Florey, Ernst Boris Chain and Norman Heatley â€” to form what we today know as penicillin. In , penicillin became available for medicinal use to treat bacterial infections in humans. Cohen Stanford significantly advanced the new technology in by transferring genetic material into a bacterium, such that the imported material would be reproduced. The commercial viability of a biotechnology industry was significantly expanded on June 16, , when the United States Supreme Court ruled that a genetically modified microorganism could be patented in the case of Diamond v. Revenue in the industry is expected to grow by This section needs to be updated. Please update this article to reflect recent events or newly available information. The biotechnology sector has allowed the U. By increasing farm productivity, biotechnology boosts biofuel production. For example, one application of biotechnology is the directed use of organisms for the manufacture of organic products examples include beer and milk products. Another example is using naturally present bacteria by the mining industry in bioleaching. Biotechnology is also used to recycle, treat waste, clean up sites contaminated by industrial activities bioremediation , and also to produce biological weapons. A series of derived terms have been coined to identify several branches of biotechnology, for example: Bioinformatics also called "gold biotechnology is an interdisciplinary field that addresses biological problems using computational techniques, and makes the rapid organization as well as analysis of biological data possible. The field may also be referred to as computational biology, and can be defined as, "conceptualizing biology in terms of molecules and then applying informatics techniques to understand and organize the information associated with these molecules, on a large scale. An example would be the selection and domestication of plants via micropropagation. Another example is the designing of transgenic plants to grow under specific environments in the presence or absence of chemicals. One hope is that green biotechnology might produce more environmentally friendly solutions than traditional industrial agriculture. An example of this is the engineering of a plant to express a pesticide , thereby ending the need of external application of pesticides. An example of this would be Bt corn. Whether or not green biotechnology products such as this are ultimately more environmentally friendly is a topic of considerable debate. An example is the designing of an organism to produce a useful chemical. White biotechnology tends to consume less in resources than traditional processes used to produce industrial goods.

This includes biotechnology-based approaches for the control of harmful insects, the characterisation and utilisation of active ingredients or genes of insects for research, or application in agriculture and medicine and various other approaches. One application is the creation of enhanced seeds that resist extreme environmental conditions of arid regions, which is related to the innovation, creation of agriculture techniques and management of resources. Biotechnology has contributed to the discovery and manufacturing of traditional small molecule pharmaceutical drugs as well as drugs that are the product of biotechnology â€” biopharmaceutics. Modern biotechnology can be used to manufacture existing medicines relatively easily and cheaply. The first genetically engineered products were medicines designed to treat human diseases. To cite one example, in Genentech developed synthetic humanized insulin by joining its gene with a plasmid vector inserted into the bacterium Escherichia coli. Insulin, widely used for the treatment of diabetes, was previously extracted from the pancreas of abattoir animals cattle or pigs. The resulting genetically engineered bacterium enabled the production of vast quantities of synthetic human insulin at relatively low cost. The application of biotechnology to basic science for example through the Human Genome Project has also dramatically improved our understanding of biology and as our scientific knowledge of normal and disease biology has increased, our ability to develop new medicines to treat previously untreatable diseases has increased as well. In addition to studying chromosomes to the level of individual genes, genetic testing in a broader sense includes biochemical tests for the possible presence of genetic diseases, or mutant forms of genes associated with increased risk of developing genetic disorders. Genetic testing identifies changes in chromosomes , genes, or proteins. As of several hundred genetic tests were in use. Agriculture[edit] Genetically modified crops "GM crops", or "biotech crops" are plants used in agriculture , the DNA of which has been modified with genetic engineering techniques. In most cases, the main aim is to introduce a new trait that does not occur naturally in the species. Examples in food crops include resistance to certain pests, [36] diseases, [37] stressful environmental conditions, [38] resistance to chemical treatments e. These have been engineered for resistance to pathogens and herbicides and better nutrient profiles. GM livestock have also been experimentally developed; in November none were available on the market, [50] but in the FDA approved the first GM salmon for commercial production and consumption. Industrial[edit] Industrial biotechnology known mainly in Europe as white biotechnology is the application of biotechnology for industrial purposes, including industrial fermentation. It includes the practice of using cells such as micro-organisms , or components of cells like enzymes , to generate industrially useful products in sectors such as chemicals, food and feed, detergents, paper and pulp, textiles and biofuels. By using renewable raw materials to produce a variety of chemicals and fuels, industrial biotechnology is actively advancing towards lowering greenhouse gas emissions and moving away from a petrochemical-based economy. Vallero and others have argued that the difference between beneficial biotechnology e. Regulation of genetic engineering and Regulation of the release of genetic modified organisms The regulation of genetic engineering concerns approaches taken by governments to assess and manage the risks associated with the use of genetic engineering technology, and the development and release of genetically modified organisms GMO , including genetically modified crops and genetically modified fish. There are differences in the regulation of GMOs between countries, with some of the most marked differences occurring between the USA and Europe. For example, a crop not intended for food use is generally not reviewed by authorities responsible for food safety. Depending on the coexistence regulations, incentives for cultivation of GM crops differ. Each successful application is generally funded for five years then must be competitively renewed. Graduate students in turn compete for acceptance into a BTP; if accepted, then stipend, tuition and health insurance support is provided for two or three years during the course of their Ph.

Chapter 2 : BIOTECHNICS AND SOCIETY: THE RISE OF INDUSTRIAL GENETICS, by Sheldon Krimsky

An overview of the first ten years of the industrial revolution in applied molecular genetics, this work discusses the birth and expectations of the biotechnology industry, the response to products.

Marianne Teo Marianne Teo is a freelance writer and curator. Sixteen members are participating in this exhibition together with several invited artists. Over the years it has held regular exhibitions to display the works of printmakers. In tandem with exhibitions, it has also organised talks and demonstrations, while some of its members teach this art form at local art institutions. However, prior to its founding, the printmaking scene was a quiet one and printmaking was not offered in the art schools until the mid-eighties. Yet printmaking has enjoyed a long history in Singapore; woodblock prints appeared as illustrations in the local Chinese newspapers in the s. It was a medium brought here by Chinese immigrant artists. This medium was widely exploited for illustrations in books and magazines. The turning point came in the post-war period when artists found an ideal subject for woodblock; the subject was the social ills that came to the fore in Singapore in the s and s. The heyday for printmaking was during this period and artists like Lim Mu Hue, Foo Chee San and See Cheen Tee produced powerful images that captured the milieu of that time. Such works were displayed in the exhibition, History through Prints: This exhibition highlighted both the medium and the works, and demonstrated to great effect what simple tools could achieve under the creative hands of the artists. Each artist contributed three prints to this fusion of cleverly collated work. The artists did not know how the final composition would work out; the conditions they had to observe were a specific set of colours, the use of a specific type of paper, the dimensions and the bleeding of the edges. Once the prints were placed in position, another technique was used to print images over this composition. Thus, in this composite work, the different phases in the different techniques in the printing process were creatively fused into a dazzling large composition - a fitting metaphor for the efforts of the Society in promoting the appreciation and the art of printmaking. The second interesting part of the exhibition is the Book of Prints. Each artist contributed a minimum of three prints which were then bound into a book format measuring 50cm by 70cm. This will take visitors back in time to the past, when prints were book illustrations. The images were painstakingly etched on wood, stone or metal plates and printed in the printing workshops. In leafing through these prints, visitors can also take a closer look at the prints and see the creative features of the different printing techniques. Some will evoke a contemplative mood while others will challenge the viewer to think about how the prints came into being. It will be a rare visual and tactile treat to leaf through this Book of Prints. Here, the prints are mounted individually and the visitor can enjoy each work in its own space. The bold dramatic woodcuts contrast with the muted, rather whimsical silkscreen and collagraph prints. Visitors will also be treated to works by Chng Seok Tin, the doyen of the printmaking fraternity. An artist, a teacher and a mentor, she has worked tirelessly in pursuit of pushing the limits of the medium and the technique. Her works in this exhibition show the versatility of printmaking and the level of maturity in this art form. The final section brings the visitor to the origins of the prints - the plates from which the prints were pulled off. The plates range from wood to metal to silkscreen. Wood, readily available, has been popular with artists like Lim Mu Hue. A plank of wood is patiently carved to reveal the desired image in relief. The raised image is inked with a sticky ink which does not flow into the grooves. The paper is then pressed onto the inked block to lift the inked image. This relief printing process is the same for images worked on metal plates. The antithesis to the relief printing process is intaglio, where the image is recessed into the plate and the ink is forced into the grooves or pits. The paper is then pressed onto the plate to lift the image off the grooves or pits. Moving away from carving or engraving on a plate is the method of silkscreen printing. Here a stencil, cut into the desired image, is affixed to a fine mesh of silk and the ink is forced through this onto the paper below the screen. The plates invite the visitor to pause and ponder the various processes of printmaking. The organisation of the works in this exhibition serve to inform the lay visitor of the creative printmaking process and the results of this process. In the attendant activities organised by the Society, the printmaking medium will be put forth for discussion and creative innovations will be bared for scrutiny and debate. Time Phase Print is thus a timely platform to bring the

Society to a new level of communication within the printmaking community and the public at large. Susanne Ramberg, 50 x 50 cm Silkscreen on paper.

Chapter 3 : Biotechnics and Society : Sheldon Krimsky :

The Life Art society: Blk 75 Tiong Poh Rd # S Promotes local art and youth groups through competitions and activities. Modern Art Society.

In he joined the navy to serve in World War I and was assigned as a radio electrician. He later worked for The New Yorker where he wrote architectural criticism and commentary on urban issues. The Golden Day contributed to a resurgence in scholarly research on the work of s American transcendentalist authors and Herman Melville: Soon after, with the book The Brown Decades, he began to establish himself as an authority in American architecture and urban life, which he interpreted in a social context. In his early writings on urban life, Mumford was optimistic about human abilities and wrote that the human race would use electricity and mass communication to build a better world for all humankind. He would later take a more pessimistic stance. His early architectural criticism also helped to bring wider public recognition to the work of Henry Hobson Richardson , Louis Sullivan and Frank Lloyd Wright. His wife Sophia died in , at age The term is an important one because it sets limits on human possibilities, limits that are aligned with the nature of the human body. Mumford never forgot the importance of air quality, of food availability, of the quality of water, or the comfort of spaces, because all these things had to be respected if people were to thrive. Technology and progress could never become a runaway train in his reasoning, so long as organic humanism was there to act as a brake. Thus his criticism and counsel with respect to the city and with respect to the implementation of technology was fundamentally organized around the organic humanism to which he ascribed. It was from the perspective of organic humanism that Mumford eventually launched a critical assessment of Marshall McLuhan , who argued that the technology, not the natural environment, would ultimately shape the nature of humankind, a possibility that Mumford recognized, but only as a nightmare scenario. Mumford believed that what defined humanity, what set human beings apart from other animals, was not primarily our use of tools technology but our use of language symbols. He was convinced that the sharing of information and ideas amongst participants of primitive societies was completely natural to early humanity, and had obviously been the foundation of society as it became more sophisticated and complex. He had hopes for a continuation of this process of information "pooling" in the world as humanity moved into the future. For Mumford, technology is one part of technics. Using the broader definition of the Greek tekhne , which means not only technology but also art, skill, and dexterity, technics refers to the interplay of social milieu and technological innovationâ€”the "wishes, habits, ideas, goals" as well as "industrial processes" of a society. As Mumford writes at the beginning of Technics and Civilization , "other civilizations reached a high degree of technical proficiency without, apparently, being profoundly influenced by the methods and aims of technics. The Pentagon of Power Chapter 12 , Mumford criticizes the modern trend of technology , which emphasizes constant, unrestricted expansion, production, and replacement. He contends that these goals work against technical perfection, durability, social efficiency, and overall human satisfaction. Modern technology, which he called "megatechnics", fails to produce lasting, quality products by using devices such as consumer credit , installment buying , non-functioning and defective designs, planned obsolescence , and frequent superficial "fashion" changes. Otherwise many products could reach a plateau of efficient design which would call for only minimal changes from year to year. Both automatic refrigerators for daily use and deepfreeze preservation are inventions of permanent value Mumford was deeply concerned with the relationship between technics and bioviability. Before the advent of technology, most areas of the planet were bioviable at some level or other; however, where certain forms of technology advance rapidly, bioviability decreases dramatically. Slag heaps, poisoned waters, parking lots, and concrete cities, for example, are extremely limited in terms of their bioviability, illustrated in the somewhat startling novel title A Tree Grows in Brooklyn, and non-bioviable regions are common to cinema in the form of dystopias e. Mumford did not believe it was necessary for bioviability to collapse as technics advanced, however, because he held it was possible to create technologies that functioned in an ecologically responsible manner, and he called that sort of technology biotechnics. He believed this was the sort of technics needed to shake off the suicidal drive of "megatechnics.

He points out, for example, that the development of money as a technology created, as a side effect, a context for irrational accumulation of excess because it eliminated the burdensome aspects of object-wealth by making wealth abstract. In those eras when wealth was not abstract, plenitude had functioned as the organizing principle around its acquisition i. Money, which allows wealth to be conceived as pure quantity instead of quality, is an example of megatechnics, one which can spiral out of control. And, indeed, it does appear that, alongside its many benefits, the movement toward electronic money has stimulated forms of economic stress and exploitation not yet fully understood and not yet come to their conclusion. A technology for distributing resources that was less given to abstract hoarding would be more suitable to a biotechnic conception of living. Thus Mumford argued that the biotechnic society would not hold to the megatechnic delusion that technology must expand unceasingly, magnifying its own power and would shatter that delusion in order to create and preserve "livability. This notion of plenitude becomes clearer if we suggest that the biotechnic society would relate to its technology in the manner an animal relates to available foodâ€”under circumstances of natural satisfaction, the pursuit of technological advance would not simply continue "for its own sake. Thus, in a biotechnic society, the quality of air, the quality of food, the quality of water, these would all be significant concerns that could limit any technological ambitions threatening to them. The anticipated negative value of noise, radiation, smog, noxious chemicals, and other technical by-products would significantly constrain the introduction of new technical innovation. Self-regulation, self-correction, and self-propulsion are as much an integral property of organisms as nutrition, reproduction, growth, and repair. Mumford used the term biotechnics in the later sections of The Pentagon of Power, written in The term sits well alongside his early characterization of "organic humanism," in that biotechnics represent the concrete form of technique that appeals to an organic humanist. When Mumford described biotechnics, automotive and industrial pollution had become dominant technological concerns, along with the fear of nuclear annihilation. Mumford recognized, however, that technology had even earlier produced a plethora of hazards, and that it would do so into the future. For Mumford, human hazards are rooted in a power-oriented technology that does not adequately respect and accommodate the essential nature of humanity. Mumford is stating implicitly, as others would later state explicitly, that contemporary human life understood in its ecological sense is out of balance because the technical parts of its ecology guns, bombs, cars, drugs have spiraled out of control, driven by forces peculiar to them rather than constrained by the needs of the species that created them. He believed that biotechnics was the emerging answer and the only hope that could be set out against the problem of megatechnics. It was an answer, he believed, that was already beginning to assert itself in his time. Thus he ends his narrative, as he well understood, at the beginning of another one: Polytechnic, which enlists many different modes of technology, providing a complex framework to solve human problems. Monotechnic, which is technology only for its own sake, which oppresses humanity as it moves along its own trajectory. Automobiles become obstacles for other modes of transportation, such as walking , bicycle and public transit , because the roads they use consume so much space and are such a danger to people. Mumford explains that the thousands of maimed and dead each year as a result of automobile accidents are a "ritual sacrifice" the American society makes because of its extreme reliance on highway transport. Paleotechnic the time of the industrial revolution and Neotechnic later, present-day Megamachines[edit] Mumford also refers to large hierarchical organizations as megamachinesâ€”a machine using humans as its components. The most recent megamachine manifests itself, according to Mumford, in modern technocratic nuclear powers â€”Mumford used the examples of the Soviet and United States power complexes represented by the Kremlin and the Pentagon , respectively. The builders of the pyramids , the Roman Empire and the armies of the World Wars are prior examples. He explains that meticulous attention to accounting and standardization, and elevation of military leaders to divine status, are spontaneous features of megamachines throughout history. He cites such examples as the repetitive nature of Egyptian paintings which feature enlarged pharaohs and public display of enlarged portraits of Communist leaders such as Mao Zedong and Joseph Stalin. He also cites the overwhelming prevalence of quantitative accounting records among surviving historical fragments, from ancient Egypt to Nazi Germany. Necessary to the construction of these megamachines is an enormous bureaucracy of humans which act as "servo-units", working without ethical involvement. According to

Mumford, technological improvements such as the assembly line , or instant, global, wireless , communication and remote control , can easily weaken the perennial psychological barriers to certain types of questionable actions. An example which he uses is that of Adolf Eichmann , the Nazi official who organized logistics in support of the Holocaust. Mumford collectively refers to people willing to carry out placidly the extreme goals of these megamachines as "Eichmanns". The clock as herald of the Industrial Revolution[edit] One of the better-known studies of Mumford is of the way the mechanical clock was developed by monks in the Middle Ages and subsequently adopted by the rest of society. He viewed this device as the key invention of the whole Industrial Revolution , contrary to the common view of the steam engine holding the prime position, writing: National Book Award for Nonfiction. Harshly critical of urban sprawl , Mumford argues that the structure of modern cities is partially responsible for many social problems seen in western society. While pessimistic in tone, Mumford argues that urban planning should emphasize an organic relationship between people and their living spaces. Mumford uses the example of the medieval city as the basis for the "ideal city," and claims that the modern city is too close to the Roman city the sprawling megalopolis which ended in collapse; if the modern city carries on in the same vein, Mumford argues, then it will meet the same fate as the Roman city. Mumford wrote critically of urban culture believing the city is "a product of earth Mumford feared "metropolitan finance," urbanisation, politics, and alienation. In the suburb one might live and die without marring the image of an innocent world, except when some shadow of evil fell over a column in the newspaper. Thus the suburb served as an asylum for the preservation of illusion. Here domesticity could prosper, oblivious of the pervasive regimentation beyond. This was not merely a child-centered environment; it was based on a childish view of the world, in which reality was sacrificed to the pleasure principle. Schumacher , Herbert Marcuse , Erich Fromm , Murray Bookchin , Thomas Merton , Marshall McLuhan , and Colin Ward [15] â€”have been intellectuals and persons directly involved with technological development and decisions about the use of technology. Mumford also had an influence on the American environmental movement, with thinkers like Barry Commoner and Bookchin being influenced by his ideas on cities, ecology and technology.

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Chapter 5 : Biotechnology - Wikipedia

BIOTECHNICS AND SOCIETY: THE RISE OF INDUSTRIAL GENETICS, by Sheldon Krimsky ï»¿ Hodge, Winifred () From Asilomar to industrial biotechnology: risks, reductionism and regulation ï»¿.

Chapter 6 : PRINTMAKING SOCIETY

Biotechnics and Society by Sheldon Krimsky, , available at Book Depository with free delivery worldwide.

Chapter 7 : Biotechnics and Society: The Rise of Industrial Genetics by Sheldon Krimsky

Krimsky discusses the birth and expectations of the biotechnology industry, the response to products of genetic engineering, perspectives on risk assessment from different sectors of the scientific community, and public initiatives to regulate new products. Exploring the social and political.

Chapter 8 : BIOTECHNICS & SOCIETY: THE RISE OF INDUSTRIAL GENETICS

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