



General
Education

SCIENCE, TECHNOLOGY, AND SOCIETY

Daniel Joseph McNamara, SJ
Vida Mia Valverde
Ramon Beleno III

Fil
508.3
M478
2018
c-1

Table of Contents

Introduction	ix
Unit 1: General Concepts in Science, Technology, and Society	1
Chapter 1: Historical Antecedents in the Course of Science and Technology	2
Ancient Times	3
Medieval/Middle Ages	26
Modern Times	29
Philippine Inventions	32
Chapter 2: Intellectual Revolutions	39
Copernican Revolution	40
Darwinian Revolution	42
Freudian Revolution	43
Chapter 3: Science, Technology, and Nation-building	46
Pre-colonial Period	47
Colonial Period	47
Post-Colonial Period	48
Unit 2: Science, Technology, Society, and the Human Condition.	51
Chapter 4: Human Flourishing in Science and Technology	52
Technology as a Mode of Revealing	53
Technology as <i>Poeisis</i> : Applicable to Modern Technology?	55

Questioning as the Piety of Thought	56
Enframing: Way of Revealing in Modern Technology	56
Human Person Swallowed by Technology.	57
Art as a Way Out of Enframing	58
Chapter 5: Human Flourishing as Reflected in Progress and Development	62
<i>Forget 'developing' poor countries, it's time to 'de- develop' rich countries</i>	63
Chapter 6: The Good Life	70
<i>Nicomachean Ethics</i> and Modern Concepts	71
Chapter 7: When Technology and Humanity Cross.	76
Universal Declaration of Human Rights	77
Humans vs. Robots	79
Why the Future Does Not Need Us	82
Unit 3: Special Topics in Science, Technology, and Society	85
Chapter 8: Information Society	86
Information	87
The Role of Language.	87
Mathematics as the Language of Nature	88
Technological World	89
The Printing Press and Beyond	90
The World Wide Web	91

Chapter 9: Biodiversity.	96
<i>The 2010 International Year of Diversity</i>	<i>97</i>
Biotechnology.	98
Genetically Modified Organisms	99
Genetic Modification	100
Cartagena Protocol on Biosafety	102
<i>Genetically modified golden rice falls short on lifesaving promises</i>	<i>103</i>
Chapter 10: The Nano World	105
Why Nano?	106
Chapter 11: Gene Therapy	109
<i>What we should know about stem cell treatment in the PH</i>	<i>111</i>
Chapter 12: Climate Change.	115
Earth's Movement around the Sun	116
Milankovitch Parameters	119
Global Warming	122
Greenhouse Gases	124
Future Actions	126
Bibliography.	129
Index	135
About the Authors	

Index

A

AI

See Artificial intelligence

Aition, 60

Alarm clock, 17

Aletheia, 54

American occupation, 47

Aphelion, 117

Architecture, 4

Aristotle, 54, 60, 71–72

four causes, 60

Armors, 4

Art as way of enframing, 58–59

Artificial intelligence (AI), 79–80

Aspirin, 110

Axial tilt, 117

B

Babylonian civilization, 10–11

Bell, Alexander Graham, 31

Berners-Lee, Tim, 91

Biodiversity International, 98

Biodiversity, 96–102

Biotechnology, 98–99, 102

modern, 99, 102

Bound books, 19–20

Business analytics, 80

C

Caesar, Julius, 20

Calculator, 31–32

Carbon dioxide concentration,
123–126

Carr, Nicolas, 81

Cartagena Protocol on Biosafety,
102

CERN

See European Organization
for Nuclear Research

Chaos theory, 121

Chinese civilization, 22–26

Clepsydra, 16

See also Water clock

Climate, 116, 119–120, 126

Climate change, 57, 81, 115–126

Codex, 19–20

See also Bound books

Communication, 3

Copernican revolution, 40

Copernicus, Nicolaus, 41

Cosmetics, 14–15

Cuneiform, 5–6

D

Darwin, Charles, 42

Darwinian revolution, 42–43

- “De-development,” 62–66
 Del Mundo, Fe, *Dr.*, 35
 Developments in science and technology, 3–37
 ancient times, 3–26
 Filipino, 32–37
 medieval/middle ages, 26–29
 modern times, 29–32
 Dikes, 7–8
 Dyson, Freeman, 83

E

- Earth, movement around the sun, 116
 Egyptian civilization, 12–16
 eJeepney, 36–37
 Enframing, 56–58, 61
 Engineering, 4
 Equinox, 117
Eudaimonia, 71
 European Organization for Nuclear Research (CERN), 91
 Evolution, theory of, 42–43

F

- Freud, Sigmund, 43
 Freudian revolution, 43–44

G

- GE
 See Genetic engineering
 Gene technology, 109
 Genetic engineering (GE), 98–99
 See also Genetic modification
 Genetic modification, 99–100
 See also Genetic engineering
 Genetically modified organism (GMO), 99–100
 Genetics, nanotech, and robotics (GNR), 82–83
 Geocentrism, 40
 Global warming, 118, 122–123, 125–126
 GMO
 See Genetically modified organism
 GNR
 See Genetics, nanotech, and robotics
 Golden Rice, 103
 Good life, 70–71
 Google, 81
 Great Wall of China, 24–25
 Great Ziggurat of Ur, 6–7
 Greek civilization, 16–18
 Greenhouse effect, 124
 Greenhouse gases, 124
 Gunpowder, 25–26
 Gutenberg, Johann, 27

H

- Hanging Gardens of Babylon, 11
- Happiness, 71–73
- Heidegger, Martin, 52–60
- Heliocentrism, 41–42
- Hero of Alexandria, 89
- Hickel, Jason, 62
- Hieroglyphics, 13–14
- Human dignity, 77, 80
- Human nature, 83

I

- Ice Age, 119–122
- Idea, 90
- Industrialization, 124
- Information, 55–57, 87
- Ink, 13
- Intellectual Revolution, 39–40
- Internet, 80
- Irrigation, 7–8

J

- Janssen, Zacharias, 27
- Jeepney, 33, 36
- Joy, Billy, 82

K

- Keeling curve, 125
- Keeling, Charles David, 124–125
- Kier, Samuel, 30

L

- Language, 87–88
- Life, conservation of, 4
- Linnaeus, Carl, 96
- Living modified organisms, 102
- Llave, Victor, 33

M

- Marcos, Ferdinand, 48
- Mathematics, 88–89
- Medical incubator, 35
- Medicine, 110
- Microscope, 27–28
- Mijeno, Aisa, 34
- Milankovitch parameters, 120–122
- Milankovitch, Milutin, 119–122
- Modern astronomy, birth of, 41
- Mosquito ovicidal/larvicidal trap system (OL Trap), 35–36

N

- Nano, 106
- Nanostructures, 107
- Nanotechnology, 107
- Newspaper, 18–19
- Newton, Isaac, 89, 121

O

- OL Trap
 - See Mosquito ovicidal/
larvicidal trap system
- “One and the Many,” 88
- Oppenheimer, J. Robert, 82

P

- Paper, 12
- Papyrus, 12
- Pasteur, Louis, 30
- Pasteurization, 29–30
- Perihelion, 117
- Petroleum refinery, 30
- Piety, 56
- Plato, 17, 88
- Plow, 9
- Poiesis*, 54–55, 57–59
- Poincare, Henri, 121
- Precession, 117

- Precession of the equinoxes, 118
- Printing press, 26–27, 90–91
- Psychoanalysis, 43
- Psychology, 43
- Ptolemy, Claudius, 40

Q

- Questioning, as the piety of
thought, 56

R

- Recombinant DNA technology,
99–100
- Rice terraces, 47
- Roads, 10
- Robots, 79
- Roman architecture, 20–21
- Roman civilization, 18–22
- Roman numerals, 21–22

S

- Sailboat, 8–9
- Salamander amphibious tricycle,
33
- SALt lamp, 34
- Science and technology, 2–37,
73, 83
 - developments in, 2–37

- Science and technology in the Philippines, 46–48
 colonial period, 47–48
 post-colonial period, 48
 pre-colonial period, 47
- Scientific method, 88
- Self-preservation, 97
- Silk, 22–23
- Solstice, 117
- Spanish government, 47
- Stem cell treatment, 111–112
- Sumerian civilization, 5–10
- T**
- Taxonomy, 96
- Tea production, 23–24
- Techné*, 54
- Technology, 53–60, 80
 as a mode of revealing,
 53–54
 as *poiesis*, 55
 modern, 55
 swallowing human person,
 57–58
- Telephone, 31
- Telescope, 28
- Temperature, 123–126
- Thinking, 60
 calculative, 60
 meditative, 60
- “Tipping points,” 126
- Transportation, 3
- Tydall, John, 124–125
- U**
- UDHR
See Universal Declaration of Human Rights
- Unemployment, 80
- Unifying factor, 88
- United Nations General Assembly, 76
- Universal Declaration of Human Rights (UDHR), 76–79
 articles, 77–79
 history, 79
- Uruk City, 6
- V**
- Virtue, 72–73
- W**
- War weapons, 28–29
- Water clock, 16
- Water mill, 17–18
- Weapons, 4
- Wheel, 9
- Wig, 15–16
- Word, 87
- World Wide Web, 91–93