Effects of technological developments

Current and historical technological developments that had an effect on the work of designers:

Mass production:

The consumer society:
A society in which the buying and selling of goods and services is the most important social and economic activity

Built in obsolescence:
A policy of planning or designing a product with an artificially limited useful life, so it will become obsolete

Advantages for the manufacturer:

Advantages
• Products will become outdated • Increased sales/profits • Customers buy the latest products- profit • Manufacturers control when to release new products • Less money is tied up in stock • Fewer spares need to be stocked • Fewer repairs need doing • Cheaper materials can be used • Warranties can be given with confidence

Advantages for the consumer:

Advantages
• Manufacturers make best products to keep ahead of the competition • Allows the consumer to keep up to date in fashion/follow trends • Companies are in greater competition to deliver new products • Consumers have a wider choice • Designs can become more innovative • As products are upgraded the second-hand market thrives

The effect mass production has on employment:

Mass production:

- Started during the industrial revolution
- Inspired by Henry Ford (assembly line)
- Workforce splits into categories
- Highly automated
- High skilled technical roles- lots of training required
- Low skilled manual labour roles

Effects of mass production:

Advantages	*Disadvantages*
• High pay for the technical staff • Cost effective for company • Low labour costs for company- increased profits • Offshore manufacturing advantages included	• Workers replaced by machines • Low job satisfaction • Low wages for low skilled • Poor quality living conditions • Sweatshop employment • Poor/unsafe working conditions • Unemployment/less demand for labour

Effect on employment:
Mass production increases unemployment but also gives low skilled labours jobs

The 'new' industrial age of high-technology production:

Computers in the development and manufacture of products:

- CIM systems incorporating CAD and CAM used in modern manufacturing
- Helps meet quick-turnaround jobs
- Helps reduce development times and costs
- Information can be quickly stored and transferred

- Computer-to-plate (CTP) technology quickly produces printing plates

Miniaturisation of products and components:

Advanced integrated circuits (ICs):
Or microprocessors that allow more circuitry to be included on each microchip, increasing functionality and power

Advanced battery technology:
Lithium-ion rechargeable batteries, providing a lightweight means of storing a lot of energy resulting in thinner and fuel cells

Advanced liquid crystal displays (LCD):
Enabling colour screens that are thinner and brighter and require much small current, meaning greater energy efficiency and slimmer housings

- Reduces unit cost
- Low cost electronics can be produced

Examples: Mobile phones, flat screen TV's

The use of smart materials and products for innovative applications:

Smart glass:

Advantages	*Disadvantages*
• Controls amount of heat passing through a window, saving energy costs • Provides shade from harmful UV rays • Provides privacy	• Expensive to install • Requires constant supply of electricity • Speed of control • Degree of transparency

Uses: Change light transmission of windows/skylights, changes opacity from transparent to translucent

Shape memory alloy:

Advantages	*Disadvantages*
• Super elasticity- super flexible • Immediately recovers to original shape • Lightweight and durable	• Not unbreakable • More expensive than similar polymer frames

Uses: Spectacle frames, memo flex glasses

Thermochromics pigments:

Advantages	*Disadvantages*
• Immediate visual indication of temperature • Safety feature • Aesthetic 'novelty' appeal	• Limited colour range • Not possible to engineer accurate temperature setting to colour changes

Uses: 'Chameleon' kettle, mugs, baby spoons

Smart fluid/oils/grease:

Advantages	*Disadvantages*
• Improves handling and roadholding as it adapts to road • Better and faster control	• More expensive than traditional systems

Uses: Car suspension systems

The global marketplace:

Offshore manufacturing:

Advantages	*Disadvantages*
• Lower labour costs • Greater availability of labour • Cheaper/more available land • Less strict H&S, restrictions, tax, environmental standards • Lower energy costs	• Jobs lost in host nation • Low income for employees • Exploitation of employees • H&S, environment issues etc • Local community dependent on multinationals

Advantages for a country hosting offshore manufacturing:

Advantages
• Increased employment • Wider expertise brought into the country • Increased training • Advanced technology • Increased reputation of country • More investment/stronger economy • A better standard of living is possible

Multinational companies:

A company that operates in more than one country (e.g. Nike, Apple, Nisan, BP)

Outsourcing:

Obtaining goods and services from an outside supplier