

INTERFACE

PEOPLE MACHINES DESIGN



August 2014 – October 2015

Introduction

Interface: people, machines, design examines how design has been applied to information technology products. The exhibition features products from the late 19th century through to the early 21st century, including iconic examples of radios, typewriters, calculators and computers.

Throughout the 20th century new technologies passed through three phases of adoption*: an enthusiast phase, a professional phase and a consumer phase. Drawing on the Museum's collection, *Interface* examines the ability of designers to build on our engagement with these devices through each phase.

Interface features some of the great consumer product companies of the 20th century, including Olivetti, Braun and Apple. It looks at the

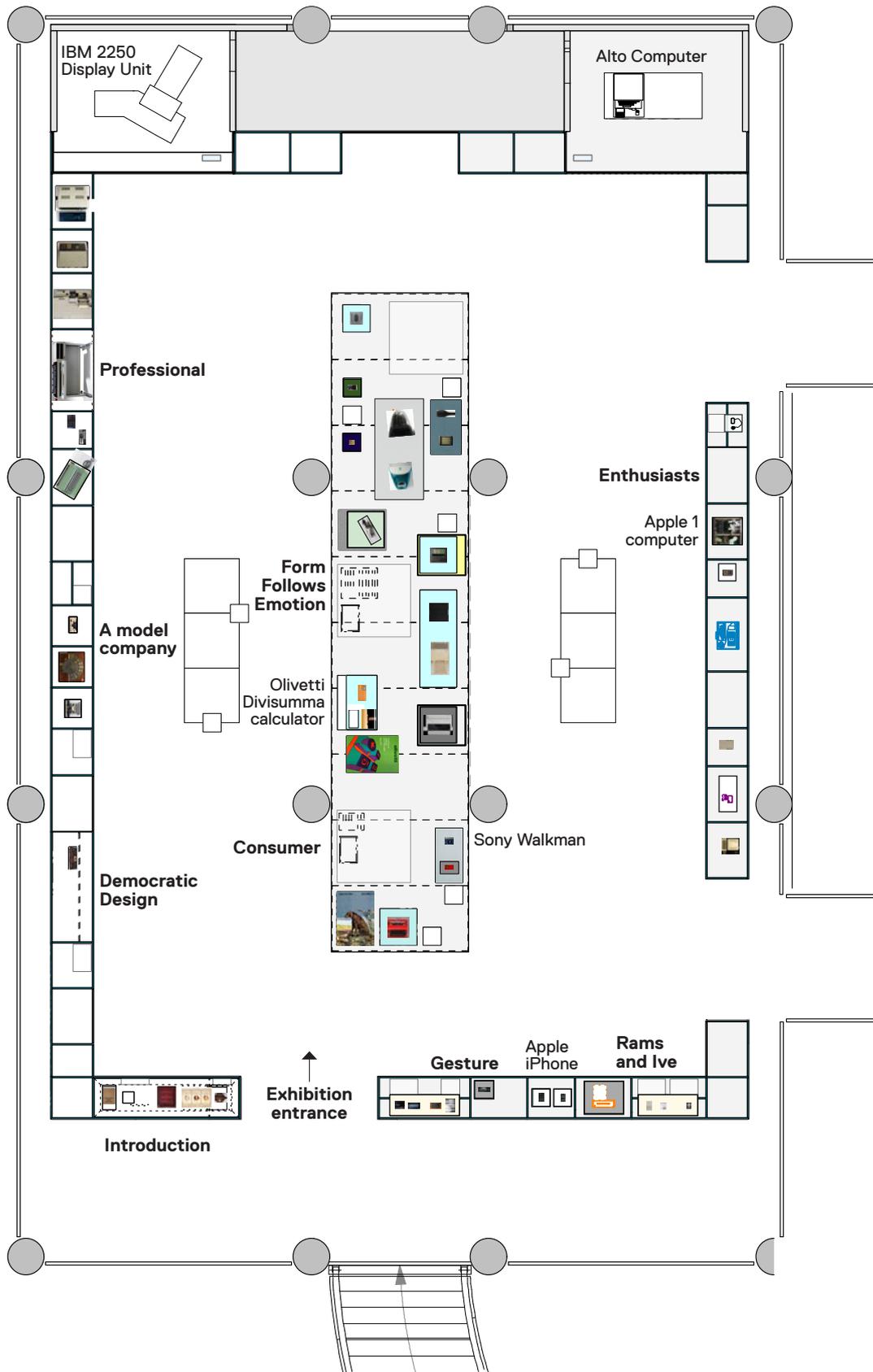
visionaries who started these companies and the designers and engineers they hired to design appealing and easy to use products.

* As identified by technologist David Liddle.

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Exhibition map



Syllabus Links

■ PRIMARY STAGE 3

NSW Syllabus for the Australian Curriculum Science and Technology

ST3-15I — describes how social influences impact on the design and use of information and communication systems.

■ SECONDARY STAGE 4

NSW Syllabus Technology (Mandatory)

4.1.2 — describes factors influencing design in the areas of study Built Environments, Products and Information and Communications.

4.1.3 — identifies the role of designers and their contribution to the improvement of the quality of life.

4.4.1 — explains the impact of innovation and emerging technologies on society and the environment.

Design and Technology

4.1.1 — identifies and describes a range of design concepts and processes.

4.2.1 — describes the impact of past, current and emerging technologies on the individual, society and environments.

4.3.1 — describes the work and responsibilities of designers and the factors affecting their work.

4.3.2 — describes designed solutions that consider preferred futures, the principles of appropriate technology and ethical and responsible design.

4.4.1 — identifies innovative, enterprising and creative design ideas and solutions.

Information and Software Technology

4.4.1 — describes a range of past, current and emerging information and software technologies.

■ STAGE 5

NSW Syllabus

Design and Technology

5.1.1 — analyses and applies a range of design concepts and processes.

5.2.1 — evaluates and explains the impact of past, current and emerging technologies on the individual, society and environments.

5.3.1 — analyses the work and responsibilities of designers and the factors affecting their work.

5.3.2 — evaluates designed solutions that consider preferred futures, the principles of appropriate technology and ethical and responsible design.

5.4.1 — develops and evaluates innovative, enterprising and creative design ideas and solutions.

Information and Software Technology

5.4.1 — analyses the effects of past, current and emerging information and software technologies on the individual and society. Including Core Topic 2: Past, Current and Emerging Technologies.

■ STAGE 6

NSW Syllabus

Design and Technology

P1.1 — examines design theory and practice, and considers the factors affecting designing and producing in design projects.

P2.1 — identifies design and production processes in domestic, community, industrial and commercial settings.

P2.2 — explains the impact of a range of design and technology activities on the individual, society and the environment through the development of projects.

H1.1 — critically analyses the factors affecting design and the development and success of design projects.

H2.1 — explains the influence of trends in society on design and production.

H2.2 — evaluates the impact of design and innovation on society and the environment.

H3.1 — analyses the factors that influence innovation and the success of innovation.

Information Processes and Technology

P4.1 — describes the historical development of information systems and relates these to current and emerging technologies.

H3.1 — evaluates and discusses the effect of information systems on the individual, society and the environment.

Key aims and messages

The aim of *Interface: people, machines, design* is to explore great information products from a century of rapid change and trace the methods and attitudes of the corporations and people who developed them. Key messages for you to work with include:

- Good design considers the user, the purpose and the function of the object.
- Great designs for an existing device often present a radical departure from the established product language.
- These radically rethought devices employ disruptive and emerging technologies that displace existing ones and the methods of operation associated, eg transistor, LCD, Mouse, touch screen.
- Design of this calibre requires visionary leadership that is prepared to invest resources (time and money), take risks, experiment, be decisive and understand what people need.
- From the outset some companies understood that these devices could become integral to the way we do things.

■ KEY EXHIBITION THEMES

Democratic design

As Germany recovered from chaos in the aftermath of World War II, influential German designer Dieter Rams (1932–) sought to apply democratic ideals to his designs for Braun, including mobility, accessibility, simplicity and affordability.

A model company

Olivetti was a small family business established in the first decade of the 20th century by engineer Camillo Olivetti (1868–1943). Camillo's son Adriano Olivetti (1901–60) became general manager in 1933 and set about recruiting the best designers and architects. Adriano believed that “design is a question of substance, not just form”. Under his leadership the company became one of the first Italian manufacturers to consider the links between the means of production of a new technological product, and its appearance and cultural role in the contemporary environment.

Olivetti had a major influence on information technology design. According to Apple designer Ken Campbell, “Steve [Jobs] not only wanted our design to be the best in the computer industry, he also wanted Apple to be in the 1980s what Olivetti had been in the 1970s — an undisputed leader in industrial design.”

Enthusiasts

Enthusiasts are the technically-minded designers, engineers and inventors who demonstrate what a product *could* be. They adopt a new technology because they see its potential. They tinker and resolve the problems that new technology exhibits and begin to break down the barriers between machines and people, leading towards more personalised products.

The groundbreaking technology featured here illustrates how the human-computer interface gradually developed and how preferred elements of design became the norm. In the development of human-computer interface design there were two crucial innovations: the mouse designed by engineer Doug Engelbart in the late 1960s and the graphical user interface (GUI) developed by Xerox PARC in the early 1970s. These key technologies became the cornerstone of the personal computer systems we now use.

Professional

New developments in office equipment through the second half of the 20th century brought about dramatic changes in office culture and the organisation of office labour. This section focuses on the efforts of companies such as IBM, Hewlett Packard and Olivetti to develop systems for office workers and professionals in the mid to late 20th century.

The professional phase in a technology's life heralds its wider acceptance and understanding. The design values that are applied to products through this ‘professional’ phase included reliability, performance and useability.

Consumer

This section showcases some of the great consumer products of the mid to late 20th century. The designers featured here have incorporated new materials or adapted technologies to create innovative new forms. Their focus was not on the technology, which is increasingly hidden, but on what it can do for people.

Celebrated Italian designer Mario Bellini (1935–) considered the tactile appeal of a product and the user’s emotional response to it. His designs for Olivetti are playful and inviting. This aspect of Bellini’s design philosophy became highly influential; it was an attitude other designers understood and employed including Apple designer Sir Jonathan Ive (1967–) and German Industrial designer Hartmut Esslinger (1944–).

Form follows emotion

German designer Hartmut Esslinger (1944–) used the phrase “form follows emotion” to describe his guiding principle for design. In 1982–83 Esslinger became design consultant for Apple. His influence is evident not only in the Apple products of this time, but also the way the company placed design at the centre of the product development process.

Rams and Ive

German industrial designer Dieter Rams joined Braun in 1955 and was Chief Design Officer from 1961 until 1995. His designs for Braun were crafted in an analytical/rationalist approach — they demonstrate an orderly treatment of form and materials. Rams has spoken of his desire to present a product’s function clearly and communicate a sense of purity in form.

These elements are echoed in the work of English designer Sir Jonathan Ive. Since 2000 Ive’s designs for Apple display a strong resemblance to Rams in the treatment of form, finish and materials, particularly the Braun products designed by Rams in the 1950s and 1960s. Ive describes part of his design methodology as the task of removing elements vying for a user’s attention.



Olivetti ‘Valentine’ typewriter by Ettore Sottsass and Perry King, 1969.

Gesture

The primary interface for modern smart phones and tablet computers is a gesture control surface. This type of interface has many predecessors, both in the real world and in science fiction. In order to give the user a feeling of interaction designers focus on making dynamic screen images that seemingly respond to touch and gesture.

■ KEY OBJECTS

Enthusiasts

APPLE I PERSONAL COMPUTER



Manufacturer: Apple Computer Inc
Designer: Steve Wozniak
Country: USA
Year: 1976

Steve Wozniak (1950–), a computer hobbyist, built himself a computer using the new MOS technology 8-bit 6502 microprocessor in the mid-1970s. In an environment dominated by computer kits with cumbersome input and output devices, Wozniak's computer represented a significant step towards a marketable personal computer. The design for what would become the Apple I employed an elegant economy of component architecture to perform the tasks of processing, generating video output and refreshing memory simultaneously, and it was easily connected to a keyboard. These differences made his computer simpler to use and cheaper to produce and sell than other kits available at the time.

Wozniak met Steve Jobs (1955–2011) at a Homebrew computer club meeting in California. Jobs suggested they sell the Apple 1 computer and within weeks he had an order for 100 kits from a local computer parts shop. The production run for the Apple I was 200. This is one of about 50 surviving examples in public and private collections worldwide.

COMPUTER MOUSE (REPLICA)



Manufacturer: Bill English
Designer: Doug Engelbart
Country: USA
Year: developed 1965, patent 1967

Doug Engelbart (1925–2013) trained in electrical engineering and became one of the seminal figures of computer interface design. Inspired by

the writings of American engineer and inventor Vannevar Bush, he set up the Augmentation Research Centre at Stanford Research Institute and set about developing new ways for people to directly interact with information.

By 1969 Engelbart and his team had looked at all the tools people used to interact with computers — keyboards, printers, screens, light pens and track balls — and had built some devices of their own, including the computer mouse. The mouse created a powerful interaction between people and computers. When the user moved the mouse, the pointer on the computer screen moved. The original mouse was designed and built by Engelbart and Bill English at Stanford Research Institute and was named the 'X-Y Position Indicator for a Display System'.

ALTO COMPUTER



Manufacturer: Xerox
Designer: Charles P Thacker
Country: USA
Year: 1973

Founded in 1971, the Xerox PARC research facility in Palo Alto, California, developed and predicted key technologies that would be the cornerstone of the personal computer systems we now use — the graphical user interface, the mouse, being able to print exactly what appeared on the screen (WYSIWYG — what you see is what you get) and linking computers (Ethernet) so you could send and receive email, among other innovations. US computer scientist Alan Kay (1940–) developed the SmallTalk object-oriented programming environment at Xerox, an early GUI.

The Xerox Alto computer was used to demonstrate some of these developments to Steve Jobs and the Apple entourage in December 1979. Upon seeing the mouse being used with a graphical user interface (GUI) Jobs was transfixed — he understood that these were the tools non-computer users needed to interact with a computer. Xerox helped pave the way for the computer interface we use today.

Democratic Design

PHONOSUPER RADIOGRAM



Manufacturer: Braun
Designer: Dieter Rams / Hans Gugelot
Country: Germany
Year: 1963

Revolutionary in its appearance, the SK55 Phonosuper epitomised Braun's efforts to transform and differentiate the image of the company and its products from manufacturers of dowdy brown timber-cased radios with cloth grilles.

With its clear acrylic lid and white-lacquered sheet metal body, the design defied existing notions of what a gramophone should look like. Nicknamed 'Snow White's coffin' by its detractors, it was embraced by consumers and firmly established Braun's reputation in contemporary design.

Consumer

DIVISUMMA 18 PORTABLE CALCULATOR



Manufacturer: Olivetti
Designer: Mario Bellini
Country: Italy
Year: 1973

When Mario Bellini began consulting for Olivetti in 1963 it was making the transition (within its office products division) from designing and manufacturing products that were electromechanical to ones that used microelectronic technology. The synthetic rubber keypad of this portable calculator is soft to touch and the mechanism beneath has been designed with spring steel, which imparts a light but positive action. This considered approach to the tactile qualities of the materials is designed to create an emotional reaction in the user.

WALKMAN AUDIO CASSETTE PLAYER



Manufacturer: Sony
Country: Japan
Year: 1979

In developing the Walkman, Sony disregarded many features previously included in a cassette player/recorder. The Walkman had no recording capability and no speaker, instead it delivered high-fidelity audio playback via headphones. The Walkman was portable and simple to operate. By reconfiguring the existing technology into an attractive, compact package, Sony brought to market an original design that proved to be an immediate commercial success internationally. Within months the Walkman was imitated by countless manufacturers.

Two features of the original Walkman were later deleted: the facility for two sets of headphones so that a program could be shared; and the hot line (orange button) which interrupted the audio and activated a microphone so the user could hear what was happening around them without removing the headphones. A decade after the Walkman was launched a BBC documentary proclaimed: "The Japanese have a profound understanding of the principles of reductionism. It lies at the heart of their culture from Bonsai trees to rock gardens ... It is no accident that today the Japanese have surpassed the rest of the world in making intricately crafted hi-tech products."

Rams & Ive

IPOD DIGITAL MEDIA PLAYER



Manufacturer: Apple
Computer Inc
Designer: Jonathan
Ive
Country: USA
Year: 2001

The iPod digital media player integrated with a desktop computer application (iTunes), and quickly became the top selling device of its kind. By 2008 Apple's iPod classic and variations on it generated 40% of the company's total revenue, before the launch of the iPhone and iPod touch made the iPod redundant.

While there had been previous attempts to produce digital media devices, no one had produced a simple and elegant solution to the human-player interface. The controls resolve the functions of the machine into five buttons and one scroll wheel. Its distinctive white and clear acrylic form on a stainless steel back is intuitive to hold, touch and use.

Gesture

IPHONE 2G (1ST GENERATION)



Manufacturer: Apple
Computer Inc
Designer: Apple
Industrial Design
Group /Jonathan Ive
Country: USA
Year: 2007

The first iPhone was introduced to the North American market in June 2007 amid much hype. Apple is generally guarded about product development and strategies, however, the development of the iPhone was likely prompted by the displacement and decline of the iPod. Other manufacturers had introduced the functionality of a portable media player to their mobile phones in the years following the introduction of the iPod (2001). Apple adapted the technological developments of a touch screen to the production of a smart phone device.

The iPhone has been an enormously successful product in both sales volume and recognition of its innovation. In particular, the iPhone touch screen, replacing a physical keypad with a small display, offered a greater viewable surface.

Related Powerhouse Museum resources

Explore a range of Powerhouse Museum exhibitions and online resources to support your visit to *Interface: people, machines, design*:

EXHIBITIONS

- **Cyberworlds: computers and connections**
Looks at the computer and seeks to understand what it is, what it can do, why it was developed, and how it works. *Cyberworlds* questions the relationship between people and computers, and their impact on our lives.
- **Technologies that changed our minds**
Examines the technologies that have changed human consciousness and redefined who we understand ourselves to be – from the telescope to the printing press, clock and more.
- **2014 Good Design Awards (until July 2015)**
The Museum's annual selection from the Good Design Awards shows how design touches every aspect of our lives. The exhibition showcases examples of how traditional product design is becoming increasingly integrated with interactive and communication technologies, in products such as the Smart City Parking System and the Holiday Light.

ONLINE

Exhibition website

- Explore the key themes and objects featured in the exhibition in more detail including an exquisite object gallery.
<http://www.powerhousemuseum.com/interface>

Search our collection

- Search Powerhouse Museum objects collected from 1880 to the present day. This interactive database contains thousands of zoomable images and research into the Museum's collection. Tip: the 'Special Collections' tab of the database is a great starting point.
<http://www.powerhousemuseum.com/collection/database>

Powerhouse online

- Watch video interviews with designers, read the Museum's online design magazine D*Hub, access significant photographic collections and much more.
<http://www.powerhousemuseum.com/online>

PUBLICATION

- **Interface: people, machines, design**
The publication features a conversation with revered Italian designer Mario Bellini in which he reflects on his design approach and philosophy, as well as essays by Museum curator Campbell Bickerstaff, design academic Jesse Adams Stein and technology journalist Seamus Byrne. It also features over 60 information technology design classics from the Museum of Applied Arts and Sciences collection, spanning just over a century and including typewriters, radios, telephones, calculators, computers, portable media players, mobile phones and tablets.

Format: paperback, 176 pages, 170 x 230 mm, with over 180 images

RRP: \$39.95

Publication date: August 2014

Available from: Powerhouse Museum Shop or order online: http://www.powerhousemuseum.com/publications/publications_item.php?id=272





Blickensderfer 6 portable typewriter by George Canfield Blickensderfer, 1906.

For more information on the exhibition *Interface: people, machines, design*, visit the Powerhouse Museum's website
www.powerhousemuseum.com/interface

For more information about education support or your booking, contact Bookings at the Powerhouse Museum:
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