Praise for *Exploding the Myths of Modern Architecture*:

"This is a book for all of us who are dismayed by architecture critics and clients who fawn over 'starchitects' who continue to produce over-budget, poorly functioning, and absurdly inappropriate buildings... Millais' book is clearly written, avoids technical jargon, and is accessible to a general audience... One also hopes the volume might be smuggled into the libraries of architectural schools."

— Clem Labine, *Traditional Building*

"Its two great strengths, I find, are its historical scope and its engineering knowledge... The whole enterprise is funny, penetrating, staggeringly well informed and clarifyingly illustrated. I'd put it beside Hughes's book *The Shock of the New* in terms of its mastery and the amount I have learned from it."

— John Carey, chief book reviewer,
The Times of London

"A potentially persuasive demolition job on modern architecture."

— Eleanor Young, *RIBA Journal*

"Makes a devastating case against modern architecture... meant to be "pure", "honest" and functional. Yet the buildings often present serious structural and maintenance problems, dehumanise their environment and are often hated by the public. "

— Anthony Looch, *Edinburgh Evening News*

"Exposés of modern architecture have been seeing through the emperor's new clothes for half a century... Malcolm Millais's Exploding the Myths of Modern Architecture may well be the angriest, and maybe the funniest."

— David Brussat, *Providence Journal*

"Malcolm Millais' book deserves to be more influential as he is an "insider". He is an engineer who has worked with architects; he can point out with authority the structural lies and absurdities that govern the design of so many "iconic" buildings as he well understands how introverted and self-deluding the architectural "elite" is, which enables it to ignore the dissatisfactions of a wider (and by definition ignorant) public."

— Gavin Stamp, *Art Newspaper*

"Excellent... I think that it is the best in class. It goes into just the right depth, the criticism is on target and skilfully murderous and the tone is wry. Millais is sophisticated in perfect measure... an engineer and has practiced for 40 years. He WAS there!"

— Andrés Duany, *TradArch*

"A superb book... The trouble with architects who get a reputation for the odd entertaining building is that they then feel able to design abominable ones, shove them wherever they like, and expect the rest of us to be admiring, deferential and grateful. Often we are not... As Mr Millais writes in his book, to dislike such work is deemed, by the bullying intellectual arrogance of our times, to be a sign of ignorance or of a reactionary resistance to progress. He makes a strong case, which I support, for its being simply a statement about the unsuitability, inappropriateness and, quite often, inferior functionality of the buildings."

— Simon Heffer, *Daily Telegraph*

MALCOLM MILLAIS

Exploding the Myths of Modern Architecture

SECOND EDITION

SUSTASIS PRESS

Acknowledgements

This book was written with the help of many people and it is a pleasure to record my gratitude to all of them. The book started, rather unsteadily, with some 'essays' that I sent to Michael Barclay, and it was with his encouragement that these 'essays' became this book. Sadly Michael did not live to see the book completed.

Over the years a number of people took the time and trouble to read, comment and correct what I was writing. For doing this I would like to thank Michael Bussell, Judith Catchpole, Gavin Hill, Jan Maciag, Andrew Mackeith (who also coined the name The Corbuncle), John O'Connor, Maria do Carmo Paço d'Arcos, Miranda Pythian-Adams, Vera d'Almeida Ribeiro, Nikos Salingaros and Tim Uden: all of whom improved the book in different ways.

Many people generously gave me permission to use their photos and drawings. I am particularly grateful to Bill Risebero, who gave me permission to use any of his drawings that beautifully illustrate his books listed in the bibliography, and to Louis Hellman, who gave me permission to use a number of his brilliant cartoons.

I would like to thank Michael Bussell, Maria Charalambous, Laura Gray, Anna Millais, Rhona Millais, Bruce Sutherland and Malcolm Wood for taking photos specifi cally for the book.

I am grateful to Michael Bussell, Jenny McLellan, David Owen, Jill Pearlman, Andrew Saint, Nikos Salingaros, Tim Uden and Malcolm Wood for sending me useful information.

MALCOLM MILLAIS

Contents

Modern architecture is like Esperanto, an attempt to invent and impose a common "rational" language and succeeding only in being incomprehensible and alien to the majority of people.

Louis Hellman 1986

Introduction

What myths are there about modern architecture that need to be, and should be exploded? How can it be possible that something that has come to be so much part of today's world is founded on myth and deceit? In addressing these questions this book examines both the absurd pretensions in which modern architecture has clothed itself and the highly suspect manner of its derivation.

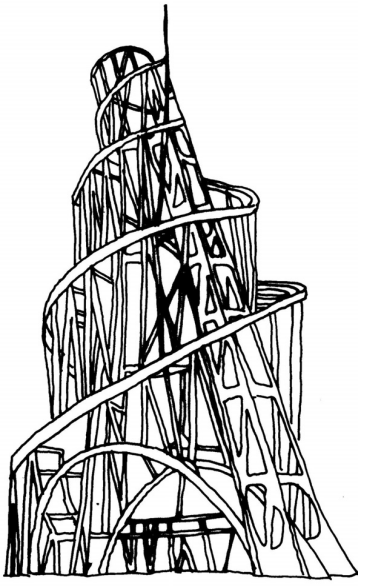
But, before the myths about modern architecture can be identified, it has to be asked if there is something that can be defined as 'architecture', as opposed to mere building; equally, a meaning has to be given to the adjective 'modern'. All pretty simple? Indeed, some might say 'it's perfectly obvious'. Well, whatever architecture may be is not as obvious as all that, but there are some forms of architecture by which buildings are designed with an intellectual dimension, or perhaps intellectual intent. Some might say that this 'intellectual intent' is what distinguishes architecture from building.

When the term 'modern architecture' is used it usually means buildings designed by architects who consider themselves, or can be considered, as part of the Modern Movement – and in this book this is what it does mean. This is a style of architecture that had its roots before World War I, but is generally considered to have flowered in the 1920s. This architectural genre often, but not always, resulted in plain flat-roofed boxes.

Modern Movement architecture as a plain, flat-roofed box

Other shapes were possible, including apparently quite randomly-curved buildings. And there could be an intermediate stage, where things were curved and straight at the same time. These often ended up being a bit wonky.

Modern Movement architecture as a randomly-curved building



Modern movement architecture as something a bit wonky

And the Modern Movement also came with a set of edicts, which included:

- Buildings must be designed on the basis of functionality.
- Decorating buildings is wrong.
- All previous designs are of no value.
- All roofs have to be flat.
- Walls must have extensive glazing or be fully glazed.
- Structures must be built of concrete or steel.
- The difference between the inside and the outside of a building must be abolished.
- Floor plans must be flexible, allowing users to do what they want.
- Materials must be used honestly.
- The building's structure must be on view, be expressed.
- Buildings must use modern technology.

At face value, some of these requirements seem quite reasonable, such as the need for architecture to be functional and to incorporate modern technology: others seem quite arbitrary, such as the blanket dismissal of decoration and previous design styles. But perhaps there were compelling reasons for the less obvious edicts, and when these are understood they all make sense. Perhaps these assumptions would lead to a new, modern, architecture, which would be functional and rational and based on science and modern technology – perhaps exactly what the modern world wanted and needed.

If a 'new' architecture were needed (and in fact there was no special reason to think so), what architecture would these assumptions produce? Would it be efficient and economical and work much better than what went before? In which case, aesthetics aside, there would be obvious advantages following such edicts, and the basic myth (as propounded by the architectural ghetto) is that this is the case. But this is not the case, as Modern Movement buildings were neither efficient nor economical, nor do they work better than those that went before. Flat roofs for example; virtually all roofs that have been built in the world are pitched, so what's better about flat ones? Well not much in Milton Keynes at any rate, 'Around 25% of all homes could have been built with faulty roofs ... some 3,450 homes have now been identified ... the common factor is that every one was built with a flat roof.'[1]

Or flexible floor plans? 'The first architectural work he [Alain Sarfati] ever did was to knock down the walls of his own three-roomed flat and create the fashionable open plan of the 1960s. That proved disastrous: it helped the break up of his marriage, by destroying the privacy of the family. Now he tries to do the opposite ...'[2]

Or using a lot of glass? 'Because there's so much glass it gets very hot in summer and cold in winter. But it's also that you can't open any windows. Part of people being happy where they work is that they can control their environment, but you can't do that at all. And because it gets so hot and people shut their blinds, we have a problem with there not being enough light'.[3]

It's easy to find more examples, and many more are given throughout the book, but the problem is much deeper than just a few 'mistakes'. The whole Modern Movement approach is based on false premises: far from being arrived at by logical analysis, as is inferred by its propagandists, it was driven by pure emotion. Furthermore, because, according to the edicts, all previous ways of designing were obsolete, no lessons could be drawn from them, hence there was no point in knowing or understanding how buildings had been conceived and built before the arrival of the Modern Movement. So everything had to be reinvented from scratch by deliberately ignoring what had previously sufficed; this almost inevitably led to problems. The idea, though never stated, was to make things look different, look functional.

Of course, for buildings to look 'functional', whatever that really means, and to actually be functional, are two very different things. But, believing in the myths, Modern Movement architects couldn't grasp this point. Buildings are literally out in all weathers, with little or no regular maintenance, factors which make extreme demands on the materials used. So the 'functional-looking' buildings would show up any small defect, any cracks or stains, whereas the ornamented ones could hide them. This effect can be readily seen in any modern city.[4]

But not only did this 'new' Modern Movement architecture fail technically and economically, it also failed culturally as most people simply didn't like it. When some Modern Movement houses were built in 1924, the estate agents had to point out that: 'the new look

[1] *Milton Keynes Gazette*, 1985.

[2] Zeldin, 1997, p183.

[3] *Guardian*, 8 February 2006, p12.

[4] Bit like spilling red wine on a white carpet rather than a heavily patterned one.

Ornamental functionality versus
lack-of-ornament non-functionality

Not pleasing at first sight?

of this villa may perhaps raise doubts in your minds ... the external appearance is not always pleasing at first sight.'[5]

Over 80 years later nothing had changed. In 2005 a librarian wrote to an architectural magazine to point out that: 'For the majority of people, modern architecture is cold, ugly and alien.'[6] But architects know this. In 1997 architect Vernon Gibberd noted: 'In the first place ordinary people didn't like International Modern (the Modern Movement) very much, and with familiarity seemed to like it less and less.'[7] All this is because, according to Alexander Tzonis, a professor of architectural theory, such buildings '... awaken us to the predicament of (post-war) everyday life; the loss of quotidian joy, the dreariness of work, loneliness of leisure.'[8]

In 1959, some poor people had the chance to be awakened to this predicament when they were put in some concrete boxes in Richmond Park near London. According to architectural pundit Jonathan Glancey, 'Architecturally, if not socially, this is one of the most successful attempts ...'[9] but 'Sadly, few of the middle-class dog walkers who stroll across Richmond Park have much good to say about it ...'.[10]

But can a building succeed 'Architecturally, if not socially'? What is this saying? The people don't like living there but architects like looking at it. This is a constant theme in tracts about modern architecture – great architecture, pity about the building.

Of course what ordinary people like is, according to architects, puerile rubbish '... in all Western countries, a bastardised vernacular remained popular with the general

[5] Zeldin, 1997, p176.

[6] *The Architect's Journal*, 12 June 2005, p29.

[7] Gibberd, 1997, p121.

[8] Tzonis, 2001, p160.

[9] Glancey, 2003, p205.

[10] The very un-middle-class Jonathan, has the very un-middle-class job of architectural and design editor for a very un-middle-class newspaper called the *Guardian*.

Where the poor people awakened to their predicament

public.'[11] In 1988, also in Richmond, some bastardised vernacular did get built, which probably pleased the middle-class dog walkers, but pundit Jonathan didn't like it at all – '... an annoying confection of pseudo-Georgian offices and shops ... a fake in the worst sense ... open-plan offices dressed in wannabe Georgian frock coats ...'.[12]

A sop to middle-class dog walkers

So yet another myth appears, which is that although the general public didn't like modern architecture, they would *when* they 'understood it'. Of course they do understand it, which is why they don't like it.

What this book aims to do is to explain how and why this extraordinary situation came about – whereby architects designed buildings based on a set of completely false premises, and so produced buildings that neither worked nor were liked. This totally flawed approach is rarely criticised, and its practitioners are so entrenched in their ghetto that they are unable (or unwilling) to see the deep-seated problem. Any criticism from within the architectural profession of the Modern Movement, past or present, is seen as evidence of eccentricity, if not mental illness, and no criticism can come from outside because outsiders 'simply don't understand'. So on they go, endlessly designing their mostly rectangular, flat-roofed, steel, concrete and glass boxes, whilst often living in Georgian houses in leafy squares.

[11] Gibberd, 1997, p151.

[12] Glancey, 2003, p65.

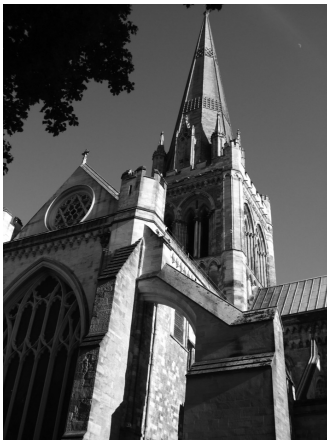
1. What's Architecture then?

It don't mean a thing if it ain't got that swing

When the legendary jazz pianist Thomas 'Fats' Waller (1904–1943) was asked what 'swing' was, he is reputed to have replied 'Lady, if you have to ask you ain't got it!'

Asking what architecture is invites similar put-downs, but this is odd because the word 'architecture' appears with monotonous regularity in the general culture. Daily newspapers have 'architectural correspondents' who write about 'architecture' and if someone says she or he is an architect few people will ask 'and what do you do exactly?' – everyone knows, but do they?

So is it worth bothering to try and define architecture in some way? It is unlikely that a clear definition will emerge, yet if something is to be discussed, some attempt must be made at the outset to clarify what exactly is under discussion. Furthermore, whilst such discussion may not be conclusive, the process may be enlightening in some way.

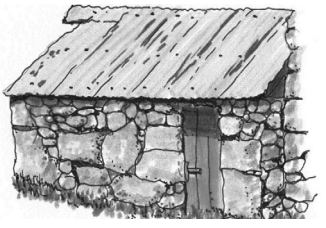


Architecture!

Probably few people would dispute that a Gothic cathedral,[1] built in the twelfth century, is 'architecture'. But what about a shed in the country? Certainly the cathedral and the shed are both buildings but is one architecture, the cathedral, and the other, the shed, just a building?[2] And if so why? What does a dictionary say:[3]

'**architecture**, the art or science of building; structure; specifically one of the fine arts, the art of designing buildings, style of buildings; structures or buildings collectively'

Not much help really, unhelpful words like 'art', 'science', 'design' and 'structures' appear. Let's try an encyclopaedia:[4]



Architecture?

[1] According to the greatest 'modern' architect, Le Corbusier, '... a (Gothic) cathedral is not very beautiful.' Le Corbusier, 1927, p32.

[2] According to Nikolaus Pesvner '... a bicycle shed is a building; Lincoln Cathedral is a piece of architecture.' Quoted in *Encyclopaedia Britannica,* Vol. 13, fifteenth edition, 1993, p897.

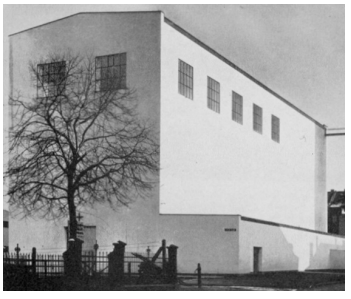
[3] *The Chambers Dictionary*, Chambers Harrap Publishers Ltd., 1993, p83.

[4] *Encyclopaedia Britannica,* Vol. 1, fifteenth edition, 1993, p531.

'**architecture**, the art and technique of designing and building, as distinguished from the skills associated with construction. As with some other arts, the practice of architecture embraces both aesthetic and utilitarian ends that may be distinguished but not separated, and the relative weight given to each can vary widely from work to work. Thus, at one end of the scale are purely functional structures (that may nonetheless possess certain aesthetic qualities, intended or not), while at the other are purely decorative ones with no genuine practical function at all.'

With this definition both the shed – '... purely functional structures (that may nonetheless possess certain aesthetic qualities, intended or not) ...' and the cathedral – '... purely decorative ones with no genuine practical function at all,'[5] can be defined as architecture. But there is a catch. Who decides and how that a purely functional structure possesses certain aesthetic qualities? And how can it be known if these aesthetic qualities were intended or not? These are difficult questions, but it is no use everyone using the word architecture without there being some agreement on what it is. Let us try a simple test.

If we accept that a cathedral has no genuine practical function at all then, in accordance with the definition, it is purely decorative and therefore architecture. Given that basically a cathedral is one large space, built to accommodate the participants in the religious celebrations, a very large shed would serve for this purpose. One church, built in 1930, certainly looked more like a shed than a church.



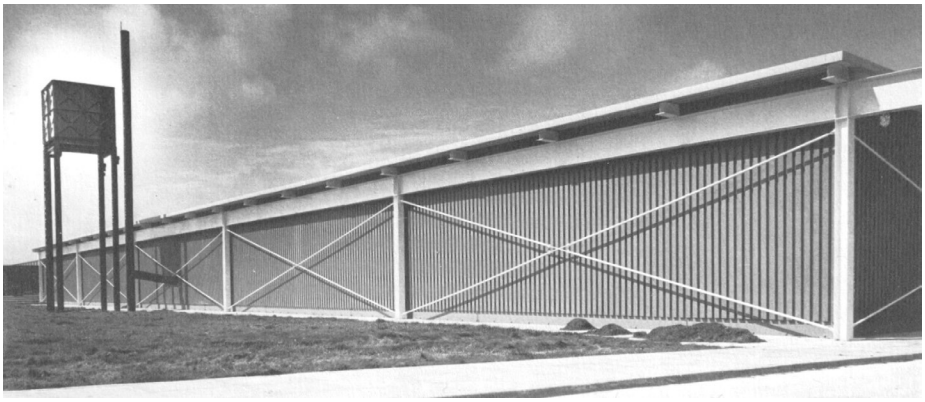
Church or shed?

A shed becomes great architecture

Not many passers-by would think that this building was a church or, probably, feel it came under the heading architecture. But what about sheds? In 1952, the 'greatest modern architect', Charles-Édouard Jeanneret, better known as Le Corbusier, designed a shed. This was built in the south of France, and the architect used it as a study. But is it architecture? Well it certainly would be considered to be architecture by his fans – almost exclusively architects and design groupies – and great architecture at that.

In 1965 a factory building, that was basically a shed, was built in Swindon. The architects were called Team 4 and included both Norman Foster and Richard Rogers, both of whom went on to found their own firms, where they achieved great success and international renown, at least amongst architects.

[5] 'A medieval cathedral ... never used ... for any recognizably useful purpose'. Dawkins, 2006, p192.



An architect-designed shed-like building

Because this building was designed by architects, who later became well-known, pictures of it appear in numerous books on architecture – so clearly this 'shed' is architecture.[6] So it seems that the function of a building cannot determine whether it is architecture or just building.

Yet another aspect has to be considered – unbuilt architecture. This is part of the metaphysical question about where architecture actually resides – in the mind of the beholder, as a separate physical entity, in the mind of the creator, as a photo or a drawing or in all of these places? Leaving aside the mind's impenetrability and the difficult problem of drawings and photographs of built projects, physical manifestations of unbuilt projects are considered to be architecture by some[7] – 'paper' architecture as it's often called.

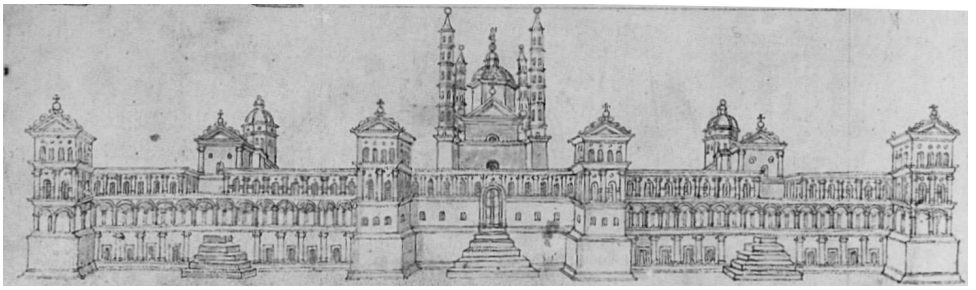
These drawings, models and computer simulations of unbuilt projects fall into two distinct categories, those that were to be built but didn't go ahead, a very common situation, and those that were never intended to be built. To see how architecture can be extended into the realms of pure fantasy, only never-to-be-built projects are included.

For architects who want to be noticed, and that's quite a few, producing never-to-be-built projects has huge advantages. Firstly they are cheap, if salaries are neglected as they usually are, secondly tedious technological constraints can be dispensed with, and thirdly they could be whole cities. In fact it is possible to build an entire architectural career on never-to-be-built projects, and many have.

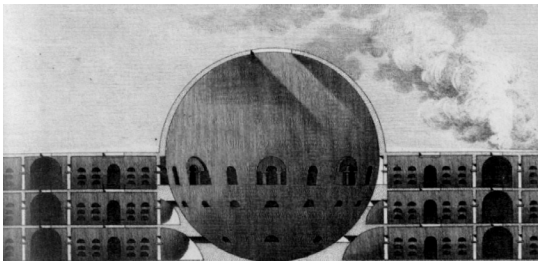
Unbuilt architecture has a long history. Maybe the first example was in the fifteenth century, when Antonio Filarete (*c.*1400–*c.*1465) proposed a city called Sforzinda, named after his patron Francesco Sforza, the Duke of Milan. In the eighteenth century, the French architect Claude-Nicolas Ledoux (1736–1806) started, in his fantastic designs, to introduce a technological aspect. This mainly took the form of drawing buildings with impossibly huge domed or even spherical structures.

[6] Demolished in 1990, the manager of the company that used it said '... the sooner it comes down the better'. *Guardian*, 19 March 1990, p38.

[7] According to Modern Movement master Le Corbusier: 'When a technical work is drawn up it exists.' Collins, 1979, p51.



Fifteenth century architectural fantasy

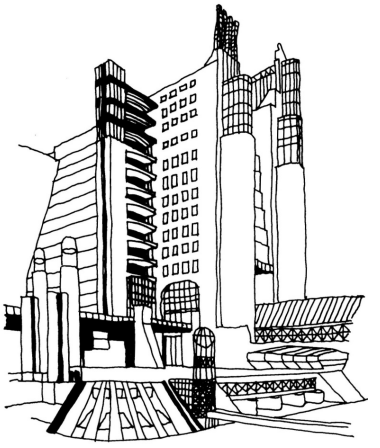


A fantastically large spherical structure

The full force of industrialisation was first felt in the nineteenth century. But with relentlessly gathering momentum in the twentieth, fantasy architects became obsessed with technological appearance, if not with technology itself. This gave rise to a number of paper architectural projects that became iconic in the architectural ghetto. The first was the 'New City' drawn by the young Italian Antonio Sant'Elia (1888–1916). His seductive drawings of a futuristic city, based on industrial iconography, are reproduced ad nauseam in architectural tracts.

Illustrated with similar frequency, is a wonky tower designed by the Russian Constructivist Vladimir Tatlin (1885–1953).[8] His tower, naively celebrating the Third International, was intended to be 100 metres higher than the then tallest structure in the world – the Eiffel tower. Furthermore, parts of it were to rotate.

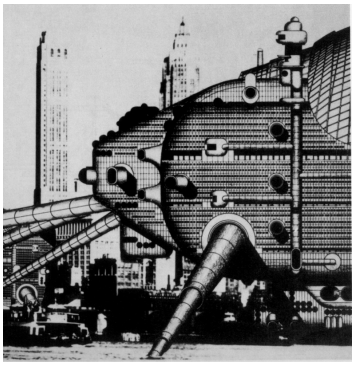
Neither Sant'Elia nor Tatlin were responsible for any substantial built project.[9] This lack of practical experience was commonplace with the 'paper' architects, a group that came to be known as Archigram being a case in point. They emerged in the 1960s producing dynamic sci-fi images, one of which was so dynamic that it showed a city walking.



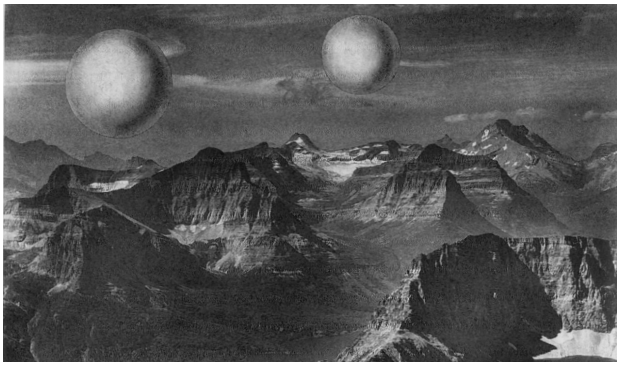
Paper architecture goes technological

[8] Already illustrated on page 2.

[9] Sant'Elia was killed, at the age of 28, in World War I, so he didn't have much opportunity to build anything, but Tatlin, whilst Stalin's demonic purges raged, was ensconced in a 'research' station. Here he studied the flight of cranes to provide him with technical data for the design of his revolutionary 'air bicycle' which was to be powered by humans using their arms. This was a total failure because Tatlin had omitted to notice that the crane's most powerful muscles powered their wings, whereas for humans the biggest muscles powered the legs.



A city passes by



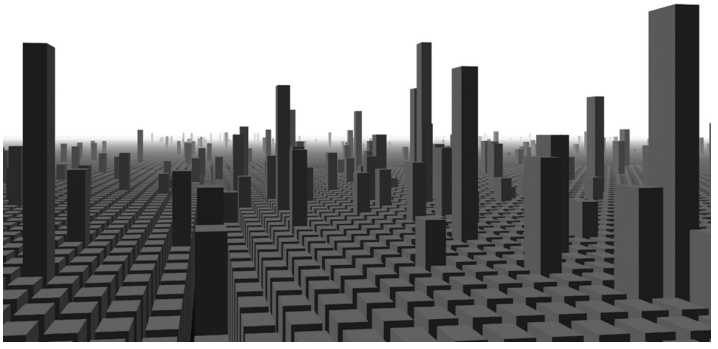
Architecture as a lot of hot air

Also in the 1960s, the American techno-mystic-guru, Richard Buckminster Fuller, was proposing that people would be able to float around the world in one mile diameter hot-air balloon cities. It's quite hard to imagine why anyone would want to spend their life floating around the world in a sphere, but so far no one has had the chance to find out.

In 1998 Willy Maas conceived Metacity/Datatown, which was a city in a video. As Maas explained, 'It is a city described by electronic information, a city without topography, without prescribed ideology, without representation, without context ...'. A population of 241 million inhabitants was predicted. It was divided into 'sectors' and the 'sector of life' was a seemingly endless sea of red cuboids, most of the same height but some of quite different heights.

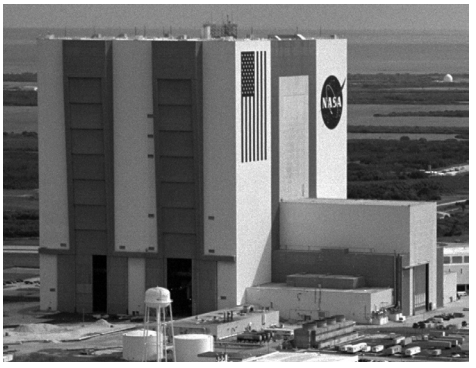
No doubt, with ever increasing technological facilities, in the future holographic architecture will be possible and perhaps techniques not yet imagined.

From this range of 'is-it-architecture-or-not?' examples can anything be concluded? Perhaps not, but there do seem to be three categories into which most of these examples can be fitted. Firstly there are buildings, or maybe other structures, that are constructed by people who want to use them. This is not to say they may not decorate them or



Life in a cuboid sea

Unpretentious cottages



Huge, but unpretentious

consider their appearance of importance, but that is as far as they want to go. These could be considered unpretentious buildings. Perhaps most buildings in the world would fit into this category.

For a building to be unpretentious it doesn't necessarily have to be small, it can be huge. One of the biggest buildings in the world, NASA's vehicle assembly building, is unpretentious, or '... a functional building designed with little thought for architectural effect'.[10]

And if a building is not unpretentious then it has to be pretentious. Unfortunately, the word pretentious is rarely used to flatter, but here it's meant neither to flatter nor insult, but to categorise buildings that are intended to be more than just functional. That is, non-functional aspects play a major role in their design. This consciously enables them to be cultural symbols – some might say this is architecture.

Consciously cultural

[10] Risebero, 1982, p229.

To be pretentious, or consciously cultural, a building does not have to be large or imposing, it can be quite modest, a weekend house in the country can be terribly cultural – architect Will Bruder designed one in 1994, and noted that 'The sculptural concept of this house is based on the creation of a succession of metaphorical separations that form a type of abstract canyon of concrete blockwork that emerges from the surrounding desert'.[11] That seems pretty cultural.

A house or a succession of metaphorical separations?

Buildings that are not built but only exist, if that's the right word, as drawings, models, videos or computer files, would not be considered to be buildings or architecture by most people – but they could be considered to be imaginary buildings. They cannot be ignored as they have played and continue to play an important role in the secluded world of architectural design.

Yet dividing all known buildings, built or otherwise, into three categories does not lead to any obvious answer as to what the difference is between building and architecture. But one could tentatively propose that those consciously trying to introduce a cultural component into the design of a building are likely to be thinking that they are creating architecture. Whereas, those just wanting a useful building, even if they paint it their favourite colour, probably aren't even thinking about it. Those who are not involved in the design/building process, but are just users or passers-by, have to decide for themselves.

[11] Jodidio, 2001, p56.

2. Ways of being Modern

Nowadays more and more people live in the 'modern' world, so it could be thought that this 'modern' world should be built of 'modern' rather than 'traditional' architecture. But this importantly ignores the quite different meanings that the word 'modern' can have. When this emotive adjective is applied to something it is often implied that it is better in some way than things that aren't modern. And if things are not modern, then what are they? Are they old-fashioned, out-of-date, traditional or past it? These descriptions can suggest that they are superseded and ought to be replaced. But the issue is not quite as simple as that, because the word can take several meanings and these different meanings can apply simultaneously. The word modern '... was first recorded in 1585 in the sense "of present or recent times", (and) has travelled through the centuries designating things that inevitably must become old-fashioned as the word itself goes on to the next modern thing'.[1] This may seem to have only one meaning but, actually, modern here can mean one of two things.

Modern can be used in the sense of an irreversible advance. To see how modern means this, one only has to look at the development of fighter aircraft for instance. In less than 60 years these developed from planes made of fabric, wood and wires capable of barely 100 mph, to those made from titanium and carbon-fibre capable of breaking the sound barrier and more.

Fighter planes in 1917 and 1976

But modern can also mean 'in fashion'. How long something is modern, in terms of fashion, is arbitrary and what follows at the end of one 'modern fashion' does not necessarily depend on what went before.

[1] See http://dictionary.reference.com/browse/modern

The height of fashion in 1832

What is modern, or fashionable, at any one time, can remain in fashion for an indeterminate length of time. Then what happens to it can vary. It can go out of fashion for ever, come back into fashion or even become the norm.

'Modern' meaning an irreversible alteration – modernity – affects society, often profoundly. For instance, the appearance of gunpowder can be seen to have the effect of modernity. Gunpowder was discovered in China in the ninth century but only arrived in Europe in thirteenth century. It permitted a completely new approach to weapons, with consequent and complete transformation of how wars could be fought, and with far-reaching effects on European society and eventually the world. The essential point about gunpowder, as an example of modernity, is that firearms using gunpowder and the gunpowder itself were continuously improved. As soon as something more effective was developed, the use of gunpowder was dropped – this is how modernity works.

On the other hand, 'modern' applied to fashion does not necessarily change society in general, but usually only influences a small group – the fashionable. Once a majority of a society adopts a new fashion it is no longer fashionable, so the fashionable have to find something new. Fashion is frequently linked to a style of personal appearance, particularly clothes. The term 'fashionable' can be applied to a variety of non-essential activities or objects. The latest fashion is modern but not necessarily modernising. Oddly these two meanings of the word modern, though very different and having very different effects, can become intertwined. When this happens it is difficult to identify how the word applies and what is affecting what.

This can happen when a revolutionary design is used for fashionable ends – the Jeep for example. This was a small World War II vehicle designed for the transport of military personnel over rough terrain. After the war, the chief engineer of the British Rover Car Co. bought one, and used it as a basis for the Land Rover. This vehicle was a huge success, being used worldwide by farmers, contractors, armed services and many others who needed a rugged all-terrain vehicle.

The revolutionary Jeep

A huge success

In 1970, the Rover Company caused a revolution by introducing the Range Rover. It had the technical capabilities of the all-terrain Land Rover but, instead of the spartan appearance and the mimal comfort, all the mod-cons of a normal car had been added; a comfortable ride, a stylish body, a low level of noise and styled interior. Initially, these rather expensive cars were bought by people who had country properties as they might need to go 'off-road' now and then. Gradually they came to denote a certain status and started to appear in cities. Eventually they became a fashionable 'must-have' and spawned the 'sports-utility-vehicle' or SUV. Now they are a commonplace sight in city centres, driven by people who, in the main, need none of the off-road capabilities.[2]

The must-have Land Rover

But how does either of these uses of the word 'modern' operate when the word is used in modern architecture? It could be naively thought, and architects would certainly encourage this, that the word is being used to reflect irreversible advances in the evolution of buildings, but this is far from the case. In fact the word comes from Modernism, the term used to denote the avant-garde arts movements of the early twentieth century and their legacy.[3] To understand how the word modern applies to architecture, the essentials of Modernism need to be understood. Unfortunately, identifying the essentials and understanding them is rather easier said than done as, in common with most 'isms', there are several points of view; however, dictionary definitions can give an initial flavour.

> **Modernism** *n* 'a deliberate philosophical and practical estrangement or divergence from the past in the arts and literature occurring esp. in the course of the twentieth century and taking form in any of various innovative movements and styles.'[4]

or, similarly

> **Modernism** *n* 'The deliberate departure from tradition and the use of innovative forms of expression that distinguish many styles in the arts and literature of the twentieth century.'[5]

It can be seen immediately that this use of the word modern is absolutely specific and can only really be used for one point in time. The questions are: why did it take place only in the twentieth century and what provoked a deliberate estrangement or departure or divergence from what went before? The answer is that Modernism is a product, or by-product, of industrialisation. Industrialisation was made possible by a discovery,

[2] And in this case the fashion for SUVs has had an effect on society, by putting on the city streets unnecessarily large and threatening vehicles.

[3] The word Modernism is also used for a late nineteenth-century movement amongst Catholics, which tried to incorporate contemporary thought into the teachings of the church. It was condemned in 1907 by pope Pius X, and its leading members were excommunicated or left the church.

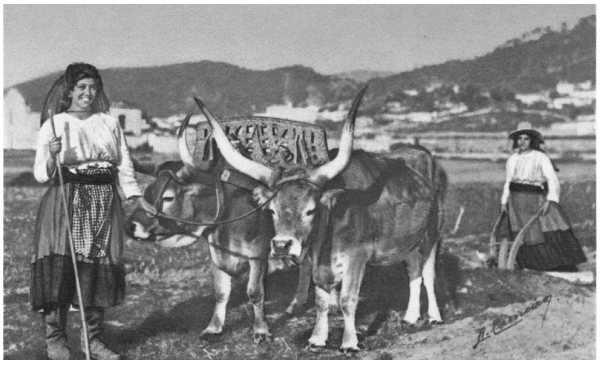
[4] *The Random House Unabridged Dictionary*, © Random House, Inc., 2006.

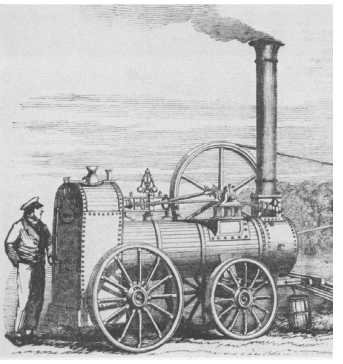
[5] *The American Heritage Dictionary of the English Language*, Fourth Edition, copyright © Houghton Mifflin, 2006.

Iron smelting in the eighteenth century

by Abraham Darby in 1709, of a smelting method that used coke, derived from coal, to produce iron.

Iron had been smelted since the Iron Age, from about 2500BC, but, before Darby's discovery, iron was an expensive material to produce. Due to the abundance of coal, iron now became a material that was cheap enough to be used on a large scale. And with affordable iron, large machines – steam engines – could be built to produce power that far exceeded that previously provided by humans and domestic animals. The steam engine, already in use in the 1700s, allowed the Industrial Revolution, as Arnold Toynbee termed it, to take place over the next two centuries.





Animal and steam power

While steam power, based on iron components, was to alter the face of Europe, America, and gradually the rest of the world, something else had already happened that would lead to a revolution in the way people thought. Two discoveries initiated this: the differential calculus, simultaneously and independently discovered by Isaac Newton (1643–1727) and Gottfried Wilhelm Leibniz (1646–1716), and Newton's concept of gravitational force (reputedly coming to him after an apple fell on his head). Combining this concept with the new differential calculus, Newton developed a system of theoretical mechanics, now known as Newtonian Mechanics, and showed how it could be used to calculate the behaviour of the solar system. This intellectual breakthrough took place in the seventeenth century, some 50 years before Darby's discovery.

The apple drops

As Newton stated, he could only make his discoveries by standing on the shoulders of giants. However his discoveries were the culmination of what is often called the Scientific Revolution. This meant that physical phenomena could be explained rationally rather than mystically.

Initially, these two revolutions – the Industrial and the Scientific – had little connection, one forging ahead with practical developments to increase productivity and create wealth, for some at least, whilst the other was seen as part of philosophy – natural philosophy. But gradually, and with increasing speed, these two started to intermesh to produce what is now known as Science and Technology. It is this that has produced, amongst thousands, such wonders as the jumbo jet, the hydrogen bomb, organ transplants, the personal computer and decoding the human genome.

The linking of science to practice – technology – produced modernising developments that came thick and fast, changing whole societies and eventually the world.[6] During the nineteenth century and the first years of the twentieth, there were so many of these practical and intellectual developments that it is hard to decide which had most effect – here is a short list:

1839 – First commercial photographic process by Louis Daguerre.
1848 – *The Communist Manifesto* by Karl Marx and Friedrich Engels.
1867 – Dynamite invented by Alfred Nobel.
1873 – James Clerk Maxwell's theory unifies electricity and magnetism.
1874 – First commercial typewriter by Remington & Sons.
1876 – Telephone invented by Alexander Graham Bell.
1879 – Light bulb invented by Thomas Edison.
1885 – Gottlieb Daimler invents the internal combustion engine.
1885 – The Rover 'Safety' bicycle marketed.
1888 – John Dunlop patents the pneumatic tyre.
1899 – Sigmund Freud publishes *The Interpretation of Dreams.*
1901 – Guglielmo Marconi transmits radio waves across the Atlantic.
1903 – Orville & Wilbur Wright perform first aeroplane flight.
1903 – Henry Ford uses an assembly line to make the Model T.
1905 – Albert Einstein publishes the special theory of relativity.
1913 – Niels Bohr presents the quantum model of the atom.[7]

[6] One of the most notable alterations due to industrialisation was population increase. In Britain the population was 10 million in 1800, but by 1900 was 40 million.

[7] It would be easy to produce other lists for this period containing equally world-shattering developments.

What this list shows is that, in the space of less than 75 years, the world was changed utterly, both practically and intellectually – in other words, the modern world had arrived.

Inventions and theories were endlessly developed and improved, each development and improvement constantly being rigorously criticised, if they did not show benefits they were rejected.[8] And all these developments had an effect on fashions, because with more efficient manufacture, transport and communications, fashions could be changed much more rapidly and drastically.[9]

Though scientific developments and the associated technology introduced radical changes, they also altered perceptions of time and space for many people. Exact time now intruded into their lives, it became important for travel; railways had to run to timetables.[10] Being late could mean that you'd miss your train, or lose your job. Trains, ocean liners, then cars and planes supplied totally new experiences of speed and space – the landscape viewed as something detached. In 1829, after the Rainhill Trials,[11] Henry Booth noted that 'perhaps the most striking result produced by the completion of this Railway, is the sudden and marvellous change which has been effected in our ideas of time and space.'[12] And Booth wasn't the only one. When Victor Hugo (1802–1885) took his first train ride in 1841 he was overwhelmed, he entered a different universe writing, 'The flowers at the trackside aren't flowers anymore; they turn into blotches or red and white stripes. The corn is a huge mass of yellow hair ... Towns, steeples and trees dance about in a crazy jumble on the horizon ...'.[13]

Whilst all these radical changes could, and did, bring excitement and material well-being to some, to others it bought despair and alienation – 'the existential angst of an individual in a mass civilisation' as John Carey puts it.[14] Despair and alienation are constant themes in one aspect of modernism; this was really a reaction to the effect of industrialisation.

Many regard Charles Baudelaire (1821–1867) as the first modernist. Though from a middle-class family, he lived as an 'outsider' which is or was an essential stance of modernism. The first line of his 1860 poem *A une passante* (*To a passing woman*) reads

> La rue assourdissante autour de moi hurlait
> (The deafening street howled around me)

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[8] There are innumerable examples of this, such as the Wankel engine. This was an alternative design for the internal combustion engine. There were no pistons going up and down in cylinders but a special shaped rotating piston. It seemed to have many advantages over the earlier model, but in spite of much development and a few production models, it just couldn't replace the earlier model so, in the end, was rejected.

[9] For example, the Italian knitwear producer Benetton would produce all its garments in white yarn, so that they could be quickly dyed fashionable colours for any market.

[10] Before the railways, town clocks in Britain were set at 12 noon by the sun, so time for towns which were more easterly or westerly would vary by several minutes. This played havoc with the railways, so Railway Time was introduced. In Great Britain it became law with the 1880 Statutes (Definition of time) Bill.

[11] These were held to choose a locomotive to pull the train on the passenger railway between Manchester and Liverpool. It was won by Stephenson's Rocket.

[12] Marchant, 2003, p61.

[13] Robb, 1997, p206.

[14] Carey, 1992, p107.

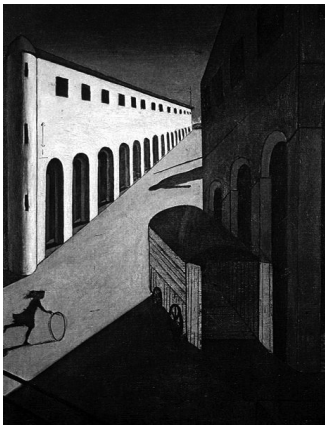
The first modernist?

Baudelaire is considered the precursor of the Symbolist poets and, according to AN Wilson, 'Modernism found it roots in the symbolist poets of the 1890s.'[15]

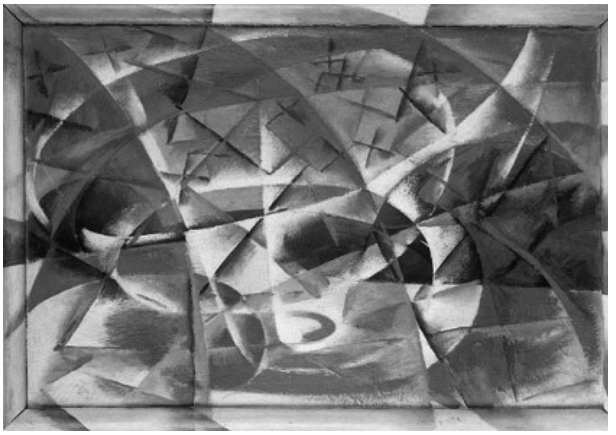
In art, despair and alienation appeared in the paintings of de Chirico (1888–1978), amongst others. For instance his 1913 painting entitled *Melancholy and Mystery of a Street* evokes feelings of loneliness and fear in an almost deserted townscape.

There was, however, another reaction to the achievements of industrialisation – to celebrate it unreservedly. This was the approach adopted by the Italian Futurists under their founder and leader, Filippo Tommaso Emilio Marinetti (1876–1944). From a wealthy background, he was a bilingual man-of-the-world. His chief interest was literature and especially poetry, which he usually wrote in French. But he also had another aim in life and that was to convince people – well, order more like – to embrace the new urban, technological life with enthusiasm. A key communication technique he used (common to many movements of the time) was the manifesto, the first appearing on February 20 1909, on the front page of the most prestigious newspaper in Europe – *Le Figaro*. It was entitled *Le Futurisme*, and the following extract gives the flavour of the self-styled Futurists:

'We will sing of great crowds excited by work, by pleasure ... greedy railway stations that devour smoke-plumed serpents: factories hung from clouds by the crooked lines of their smoke: bridges that stride the rivers like giant gymnasts, flashing in the sun with the glitter of knives ...: deep-chested locomotives whose wheels paw the tracks like the hooves of enormous steel horses bridled by tubing ...'.[16] And so on.



The despair of modernism

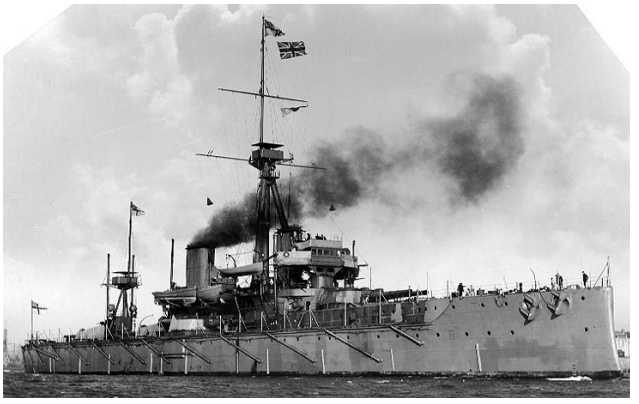


The excitement of modernism

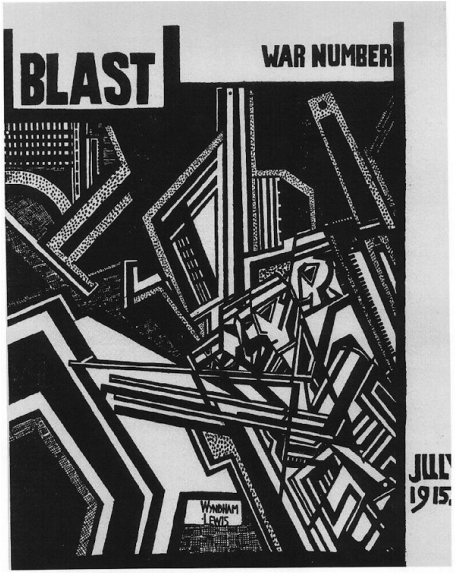
[15] Wilson, 2006, p43.

[16] From *The Founding and Manifesto of Futurism* of 1909. Tisdall,1977, p7.

Seductive and exciting as this poetic prose was, it makes no attempt to confront any of the realities of the new industrial life. Marinetti had no understanding of the underlying technology nor, more importantly, did he want any. Immensely rich, full of energy and a master of the media, he quickly attracted painters to his 'cause': to create an artistic equivalent of industrial technology. The idea of many of these paintings was to show the dynamic excitement of technology; Giacomo Balla's (1871–1958) work of 1914 entitled *Abstract Speed + Sound*, for instance.



The first modern battleship built in 1906



Modernism goes to war

It wasn't a big step, from these effusive descriptions of the speed and power of technology to a similar enthusiasm for the mechanical violence that this technology could produce. An example of this mechanical violence was the development of huge armoured battleships with powerful guns.[17]

One modernist who glorified the violence modern technology could bring was Percy Wyndham Lewis (1882–1957). He was a founder member of a group called the Vorticists and during World War I he produced a magazine suitably titled *Blast*.[18]

Thus the Modernist reactions to the reality of the new industrial world were extreme: despair on the one hand and glorification on the other. Neither of these standpoints necessarily led to a deliberate estrangement or departure or divergence from what went before, or determined as to how these reactions were to be represented.

Before the scientific and industrial revolutions, artistic creativity could be thought of as being high art and low or popular art. High art was based to a large extent on religious beliefs, so the great painters and

[17] The prototype for this was the 18,420 ton HMS *Dreadnought* built in 1906. This ship, built in only four months, had ten 12 inch guns and steam turbine engines that gave a top speed of 21 knots, out-performing by far all existing warships and triggering an arms race between Great Britain and Germany.

[18] This modernist view of the world led many modern artists, including Lewis, to hold right-wing views and in many cases to enthusiastically support the fascist regimes of the 1920s and 30s.

sculptors worked largely to glorify God (and to offer suitably religious and moral imagery for powerful potentates and princes), as did musicians and composers.[19] Low or popular art took the form of folk music and dancing, popular plays and story-telling (for the almost entirely illiterate audiences), as well as handcrafts and folk artefacts.

High and low art before modernisation

However, starting in eighteenth century, the complex forces that technology was unleashing also caused a cultural upheaval. Many trace this to the writings of Jean-Jacques Rousseau (1712–1778) who called for humanity to throw off the artificial constraints of society, particularly aristocratic society, and seek solace in the beauties of nature. Rousseau proclaimed the importance of the individual and of 'natural' individual human feelings, and in doing so completely reoriented art, literature and music as well as political thought; this is now termed Romanticism. It swept through the nineteenth century at every social and political level, and, for the first time, people felt they could experience art, literature and music directly.

So a painting such as Constable's *The Hay Wain* (actually a very carefully constructed work) of 1821 could be enjoyed as a literal, spontaneous depiction of an everyday country scene. And the values of Romanticism – specifically the importance of the individual and of individual human feeling and romantic love – continue to be, in many ways, the basis for much of the culture enjoyed by a large part of the population. But the Modernists deliberately produced art, literature and music that could not be experienced directly, which alienated the 'masses'.

In 1839, barely two years after Constable's death, the first successful commercial photographic process, the daguerreotype, became available.[20] While the nineteenth-century art critic John Ruskin (1819–1900) could state that '... a photograph is not a work of art ...',[21] the introduction of photography caused a crisis in the art world. All of a sudden,

[19] According to Richard Dawkins: 'Sacred music and devotional paintings largely monopolized medieval and Renaissance talent.' Dawkins, 2006, p192.

[20] By the eponymous Louis-Jacques-Mandé Daguerre.

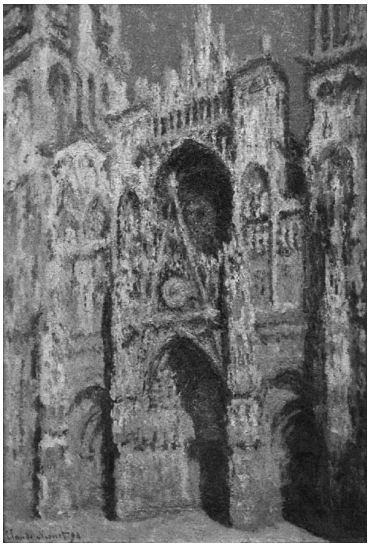
[21] Ruskin, 2001, p318.

A Romantic painting

The first photo

someone with no special skill or training could produce 'photographic realism' by taking a photograph. So, according to philosopher and critic Walter Benjamin (1892–1940), 'With the advent of photography ... art sensed the approaching crisis', thus giving rise to art which 'not only denied any social function of art but any categorizing by subject matter'.[22] The historical purpose of art had been fundamentally challenged.

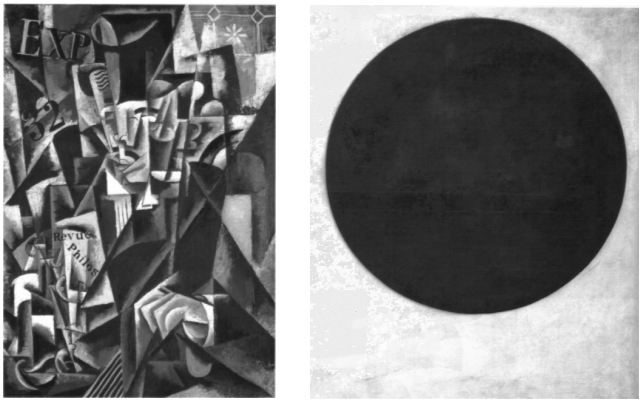
The development of photography, together with new methods of graphic reproduction and application of industrial manufacturing methods to the decorative arts, caused confusion for artists and craftspeople. How could painters continue to try and accurately portray 'real' things when a photograph could do it 'perfectly'? As the emasculating effect of 'perfect' photos was now everywhere, painters gradually abandoned the idea of depicting things realistically. This started with the work of the Impressionists in the latter part of the nineteenth century. As the word implies, their work tried to capture a fleeting moment, given that life is made up of fleeting moments. The pictures presented were still representational, but no attempt was made at realistic depiction. The pictures were blurred, something seen fleetingly.



Rouen cathedral caught in a fleeting moment

The reward for their efforts was to have their work rejected by the art establishment who refused to give them exhibition space. So they banded together to mount their own exhibition which they pointedly called Le Salon des Refusés. The fact that the establishment had rejected their work showed that, to them at least, they were on the right track. Clearly, as industrialised modernity had forced a rejection of the old rural life, their work couldn't be acceptable to artists who were still clinging to the 'old' way

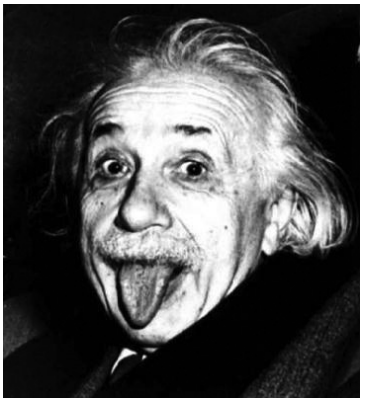
[22] Benjamin, 1936.



Distorted and abstract paintings

of painting, which included painting with consummate skill. In 1907, the most famous modernist of all, Pablo Picasso (1881–1973), painted *Les Demoiselles d'Avignon.* Often considered to be the first Modernist painting, it shows five more or less naked, more or less young, women. The bodies of the women are not attractive, erotic or pornographic, they are simplified geometric. Their faces stare blankly, three directly at the viewer without emotion – the viewer is not invited to make any emotional connection with them. 'Primitive' elements, drawn from African tribal art, were included deliberately subverting the European tradition.[23] As the twentieth century progressed these modernist paintings became more distorted and eventually abstract.

Obviously to some this new art, this 'modern' art, was shocking, but there again the effect of technological progress was also shocking. Imagine how shocking it must have been to see, for the first time, a 200 ton express steam engine bearing down on you at 100 mph, or a powered flying machine circling above you. It wasn't only physical aspects of this modernity that were shocking – there were intellectual shocks. Sigmund Freud shocked the world with his attempts at analysis of the unconscious mind. Especially shocking was his exposition of 'penis envy' and the 'Oedipus complex' which claimed that sons had sexual desires for their mothers. In 1905, Albert Einstein shocked everybody with his theory of relativity, including those (which was most people) who couldn't understand it.[24] Yes, to be modern was to be shocking.



The shocking Albert Einstein

[23] Even so, it was not exhibited publicly until 1916, and then it was considered immoral.

[24] Numerous attempts have been made to explain relativity to the layman, perhaps most notably by Stephen Hawking with his worldwide best-seller *A Brief History of Time.* However the actual predictions of relativity are so far from any ordinary experience that they cannot be explained verbally. The language of relativity is theoretical physics or, more accurately, applied mathematics. The physical results of the predictions can be 'seen', but only by using highly specialised technical equipment.