

**BEYOND
THE
ELECTRONIC
DRAWING
BOARD**

THE KEY PATTERNS SHAPING
YOUR FUTURE IN ARCHITECTURE

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Dedication

The way of looking at architecture that is the basis of this book derives from models and work methods developed whilst studying with Phillip Gibbs, Raymond Purdey and Rodick Carmichael at Deakin University.

This book is dedicated to Phil, Ray and Rod for their contribution to my life.

Thank you for presenting me with an alternative to the mainstream and for opening the door to new 'models of reality'.

"Every sentence that I utter should be regarded by you not as an assertion but as a question."

Niels Bohrs, winner of the 1922 Nobel Prize for Physics, began his lecture courses to his students with this sentence.

Jacob Bronowski, *The Ascent of Man*.

How to Use this Book

This book is the result of my quest to comprehend my own future in architecture.

It is a summary of more than ten years researching into the use of information technology in design.

As a condensation of several megabytes of notes, each page documents a powerful pattern (in some cases, a page of notes has been summarized into a single line of text).

This book presents a paradigm shift in thinking about architecture: the collision between the Industrial Age and the Information Age.

Each page directly compares and contrasts this shift.

The prose-like form of this book is intended as a playful exploration of what is possible.

As with all writing, the reader's task is to translate the words into personal meaning.

As with all futures, no directions are clear-cut (except in hindsight) - there is always more than one meaning and more than one future to be had.

I offer this book as a basis for you to invent your future; be it your personal path, that of your business, or for the true leaders and innovators, the future of your industry.

Read this book, explore the ideas within it, discuss the implications, generate a future and act upon your passion.

I challenge you to re-create architecture and re-design design.

"Most people are prisoners of their own brains. It's as if they are chained to the last seat of the bus and someone else is driving. I want you to learn how to drive your own bus. If you don't give your brain a little direction, either it will just run randomly on its own, or other people will find ways to run it for you - and they may not always have your best interests in mind. Even if they do, they may get it wrong!"

Richard Bandler, Using Your Brain - for a Change.

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The Generals

The generals were meeting to plan the battle that was to be fought the next day.

One of the generals was concerned, "Now they have those new weapons, if we fight them the old way, we'll get slaughtered. I'm not prepared to lead my men under those circumstances."

"That's right," said another general, "Every time a new weapon is created, we must re-invent the battle."

The next day, they won the battle.

A Typical Comparison

The Drawing Board

The Computer

Relatively inexpensive.

More expensive & can be a major investment.

Virtually maintenance free.

Requires regular maintenance from specialized technicians, which can also be expensive.

Requires no special working conditions.

May require temperature & humidity control.

No special operating costs.

Requires constant electric power.

“Drawing Boards will always be useful!”

Hardware and software continually becomes outdated and requires regular updating.

No on-the-job training necessary.

Even for the experienced user, continual updating of computer software and hardware requires on-going, time-consuming and often costly training.

Simple and uncomplicated.

Can be daunting and complicated for the uninitiated.

The drawing board and sketches offer a flexible design method that is traditionally accepted and understood.

Cannot design and sketch in the manner in which architects are accustomed to.

The Drawing Board

Hand drawn renderings typically have a more attractive appearance or 'style'.

The drawing board is typically slower than a computer.

Hand worked drawings are often ragged and damaged due to on-going amendments.

Hand drawn perspectives often require a specialist renderer.

Drawing Board methods could be improved a small amount.

The Computer

Computer drawn renderings typically lack the appeal of a good pencil or watercolor rendering.

Typically, provides a gain in productivity; particularly when dealing with amendments and revisions.

Computer printouts are more accurate; have better quality line work and produce a clean, un-marked original.

Can generate three dimensional perspective layouts quickly and easily.

Offers enormous potential. For example, client presentations can be enhanced through the production of 'walk-through' views.

The Horseless Carriage

The motor car is not a horseless carriage!

The 'horseless carriage' infers an extension of the original idea.

It also prevents recognition of the new tool and the possibilities that it offers.

A 'computer drawing' is a horseless carriage.

An 'electronic drawing board' is a horseless carriage.

Transitions between competing technology.

A bridge between two cultures.

Currently, computers merely automate manual drafting techniques.

A drawing board with an electronic switch.

The computer will not extend the activities of the drawing board, it will REPLACE them!

When was the last time you rode in a horse and carriage?

The Evolution of a New Species

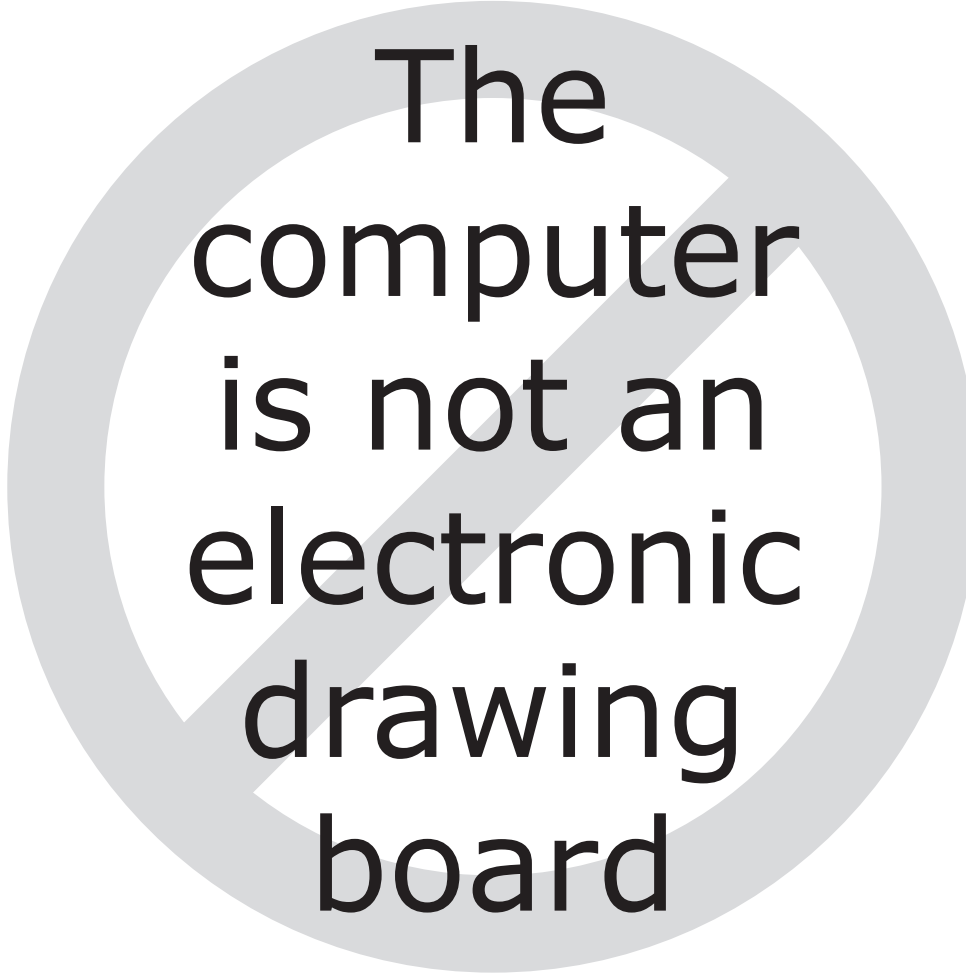
Horse and Carriage

Horseless Carriage

Motor Carriage

Motor Car

Car



The
computer
is not an
electronic
drawing
board

Going Beyond

Going beyond the Electronic Drawing Board is going beyond the mere happenings on a drawing board.

It encompasses all that architecture is.

People and Buildings.

Design and Money.

Materials and Construction.

Business and Industry.

The list goes on.

The key is the inter-relationship between the pieces.

The sum of the whole is greater than the sum of the parts.

Beyond the Electronic Drawing Board is an opening for creating architectural design systems that transform architecture.

It questions all that architecture is.

It questions all that design is.

The information structure.

The conceptual framework.

The construction materials.

The construction process.

An architectural business.

It is a new way of thinking about architecture.

The medium, or process, of our time - electric technology - is reshaping and restructuring patterns of social interdependence and every aspect of our personal life. It is forcing us to reconsider and re-evaluate practically every thought, every action, and every institution formerly taken for granted. Everything is changing - you, your family, your neighborhood, your education, your job, your government, your relation to "the others." And they're changing dramatically."

Marshall McLuhan and Quentin Fiore,
The Medium is the Massage.

A Mismatch of Technology

During World War Two, the Polish cavalry charged a fleet of German tanks.

A computer drawing is also a mismatch of technology.

The previous comparison of the Computer and the Drawing Board is a mismatch.

It assumes the computer and the drawing board are 'equivalents' to each other.

Two misconceptions support this view.

One, the drawings from the computer and the drawing board 'appear' to be the same.

Compare a painting by Picasso and a print of Picasso.

Which would you prefer to own?

'Looking the same' and 'being the same' are different.

'Doing a drawing' and 'doing a computer' are different.

One is converted to be 'like' the other.

To be a computer or to be 'like' a drawing board.

Imitation is a sacrifice of possibility.

Two, the comparison is biased in favour of the drawing board.

Would you evaluate an athlete's ability to run a marathon by having her race over 100 metres?

"...every innovation must pass through a primary phase in which the new effect is secured by the old method, amplified or modified by some new feature."

Marshall McLuhan, Understanding Media.

Midas and Medusa

A computer drawing is a mismatch of technology.

Information in a computer flows like gold; it has the touch of Midas.

Information printed from a computer has been seen by Medusa; it becomes rigid and inflexible as it turns to stone.

A computer printout robs the goose of it's golden egg.

Have you updated a drawing lately?

On a computer, updating is all there is.

"The world we have made as a result of the level of thinking we have done thus far creates problems that we cannot solve at the same level at which we created them."

Albert Einstein

From Industrial To Information

The Industrial Age

Mechanical
Renaissance
Newtonian Physics
Visual Space
Detachment
Connected/Linear
Sequential
Cause and Effect
Homogenous/Uniform
Material Intensive
Product
Standardization
Mechanical
Physical
Sport
Single Viewpoint
Perspectivism
Static
Absolute Truth or Reality
Idealized Conception
Seeing is believing
Past, present and future

The Information Age

Electric
20th Century
Quantum Mechanics
Acoustic Space
Involvement
Continuous
Relative
Simultaneous
Multi-locational
Knowledge Intensive
Knowledge
Customization
Biological
Mental
Art
Multiple Viewpoints
Mosaic Forms
Fluid
Models of Reality
Perception
Believing is seeing
Now!

The Industrial Age

Science
The Objective Viewer
Specialist
Independent
Cause and Effect
Hardware
Clock, Wheels, Cogs
Facts and Figures
Western
Civilized and Literate

The Information Age

Art
The Perceptual Response
Holistic
Interdependent
No beginning or end
Software
Water, DNA, Virus
Knowledge
Eastern
Tribal and Pre-literate

THE DRAWING BOARD IS TO THE INDUSTRIAL AGE
AS COMPUTERS ARE TO THE INFORMATION AGE

The Information Revolution

The Industrial Revolution was a social revolution.

It was not just about machines that created employment, factories and cities.

In France, their social revolution was a bloody affair.

The angry mob.

The guillotine.

The Information Revolution is a social revolution.

It is not just about machines that create unemployment, home-offices and decentralization.

In Eastern Europe the Iron Curtain rusted away.

In China it is a matter of time.

Information flow dissolves centralized power.

The global market dissolves countries.

It transforms the way we live.

“As for technological acceleration, it now approaches the speed of light. All nonelectric media had merely hastened things a bit. The wheel, the road, the ship, the airplane, and even the space rocket are utterly lacking in the character of instant movement. Is it strange, then, that electricity should confer on all previous human organization a completely new character?”

Marshall McLuhan, Understanding Media.

Properties of Information Part 1

1 Inconsumable

Goods disappear through use.

Information does not disappear.

It remains unchanged however much it is used.

Read this.

Read it again.

And again and again and again...

You can have your cake and eat it too!

3 Indivisible

Goods can be divided and used.

Electricity and Water.

Information can only be used when it constitutes a set.

Half a drawing will not describe an entire building.

Half a sentence will not

2 Untransferable

Transfer a physical good from A to B.

It is moved completely from A to B.

Transfer information and the original information remains at A.

Do you copy?

4 Accumulative

To accumulate goods don't use them.

Information cannot be consumed or transferred.

Use it again and again, it accumulates anyway.

Information quality can be improved by adding new information.

All information, whether in the Medusa form of a physical drawing or as Midas in the computer, has these four properties. However, the acceleration of information interchange, through the use of computers, has added four more properties...

Properties of Information Part 2

5 Circulation

Send a letter.

One for each person, physically copied & sent.

Send electronic mail.

Send once and received by as many people as desired.

Easier circulation, circulates more information.

7 Concentration

Information can be concentrated.

Store an entire set of encyclopaedia on one CD.

More information can be condensed into greater concentrations.

Concentration promotes portability.

Portability changes the user's relationship to it.

New tasks in new places.

6 Dispersion

Send information.

Each receiver can re-send it in a new form and context.

Scatter and multiply the original message.

Circulation ease disperses the original information further.

8 Feedback

Information circulated and retrieved very quickly, updates quickly.

The new quickly displaces the old.

The time is now...

The time is now...

Feedback loops maintain usefulness through the continual updating of the everchanging display of current information.

Design IS the Product

A client goes to a draftsman and walks away with a set of drawings.

A client goes to an architect and walks away with a set of drawings.

What's the difference?

What are you selling?

The Industrial Age was centred around the physical creation of the product.

Fait accompli, whoever created the goods and carried them to the marketplace was assured of sales and profits.

In the Information Age, the making of the product is now presumed.

The holy grail is to make a better product.

A better product is measured by the end user.

Design is no longer part of the product.

Design IS the product.

Behold the designer!

You are now the key player in the production of goods!

Upgrade your ivory tower for a control tower!

"The truly large scale production of knowledge-value will take the form of concrete goods and services in which it is embedded, or to which it can be added, and its distribution will either be synonymous with or conducted in concert with those goods and services. What I mean is that the design, the brand image, the high technology, or a product's capacity for generating specific functions will possess more and more weight in the pricing of goods and services."

Taichi Sakaiya, The Knowledge Value Revolution.

Information IS the Design

In the Industrial Age, information described the designed product.

End of story.

In the Information Age, information describes the designed product, then it becomes the design.

Information IS the design process and the product.

Buildings + Information = Transformation.

Count the computing power.

Today's motor car can fly further than the Apollo spacecraft.

Count the material cost.

The electronics add more to the cost of today's motor car than the steel.

How intelligent is your car?

House?

Washing machine?

Diary?

Desk?

Trousers?

You might be next?

"With the electronic music instrument, any tone can be made available in any intensity and for any length of time. Note that the older symphony was, by comparison, a machine of separate instruments that *gave the effect of organic unity* . With the electronic instrument, one *starts* with organic unity as an immediate fact of perfect synchronization. This makes the attempt to create the effect of organic unity quite pointless. Electronic music must seek other goals."

Marshall McLuhan; Understanding Media. (McLuhan's emphasis)

From Buildings to Software

In the Industrial Age, the drawing board as hardware produced more hardware.

Hardware is like the brain, it has a physical presence.

The software came courtesy of Medusa, fixed in place on the surface of the hardware.

Let's get physical.

Ink on paper.

Rub it, scratch it or start again.

In the Information Age, software makes software.

Software is like the mind, its usefulness exists only in our thoughts.

Doing the 'drawing' on the computer creates binary code.

Binary code is a bit of software.

The software comes courtesy of Midas, flowing like gold.

Systematize the design process as software.

Re-use it as a design system.

Ad infinitum.

From designer of buildings to designer of software that creates buildings.

Throw away the baggage of the electronic drawing board.

Welcome to the Olympics.

Faster, further, higher, stronger, easier..

Award the gold medal to the Software Architect.

"With digitalization all of the media become translatable into each other - computer bits migrate merrily - and they escape from their traditional means of transmission. A movie, phone call, letter, or magazine article may be sent digitally via phone line, coaxial cable, fibreoptic cable, microwave, satellite, the broadcast air, or a physical storage medium such as tape or disk. If that's not revolution enough, with digitalization the content becomes totally plastic - any message, sound, or image may be edited from anything into anything else."

Stewart Brand, The Media Lab.

The Lifetime Design Brief

In the Industrial Age, the Architect's design brief lasted a few months.

A linear step of procurement, design and construction.

Hand over the keys and cash your cheque.

Close the door on that job.

In the Information Age, the Architect's design brief lasts a lifetime.

Design details the customized, off-site manufacture.

On-site assembly to your instructions.

The master key is the information that describes how the building works.

Monitor progress.

Flatten the boom and bust cycle, cash flow is here!

But wait, there's more...

When the use-by date is up, dismantle your building.

Add your design expertise; recycle and re-use your leftovers into a new meal ticket.

The information that describes the building has an ongoing life.

A Lifetime Design Brief is yours for the taking.

The revolving door of perpetual motion and opportunity.

"The source of energy is separate from the process of translation of information, or the applying of knowledge. This is obvious in the telegraph, where the energy and channel are quite independent of whether the written code is French or German. The same separation of power and process obtains in automated industry, or in "cybernation." The electric energy can be applied indifferently and quickly to many kinds of tasks.

Such was never the case in the mechanical systems. The power and the work done were always in direct relation, whether it was hand and hammer, water and well, horse and cart, or steam and piston."

Marshall McLuhan, Understanding Media.

The Reincarnation of Building

In the Industrial Age, buildings died.
Clients invested in buildings.
This lasted a lifetime.
Then they died.
Pulled down and buried.
Never to be seen again.
In the Information Age, buildings are reincarnated.
Clients invest in materials.
The configuration of materials is the investment.
Like information, a building dies when it is no longer useful, in the myriad of ways this is possible.
But the structure can live on.
Reincarnate your material being.
Reincarnate your client's material being.
Dis-semble.
Re-design
Re-assemble.
Resemble a new life for the materials.
The investment lives on.
The Lifetime Design Brief lives on.
The opportunity and the responsibility is yours.
When will you allow your building to die?
Long live euthanasia.

"They took a dead heap of stones, which is not a cathedral, and they turned it into a cathedral..."

Jacob Bronowski, The Ascent of Man.

Past, Present and Future

In the Industrial Age, buildings sat still and we lived in the leftover space.

A storage unit for your life, the butler provides the service.

A one hundred year old house - How nostalgic!

Renovate the past into an old future.

Cities as storage units for past lives.

Dead structures everywhere.

The flag of preservation and conservation is at half mast.

History is the rotten apple core of the curriculum.

The parade past by and my future hit me in the face.

Where did that come from?

In the Information Age, buildings respond to your every need.

Track the sun and follow the warmth.

Block the sun and keep your cool.

An everchanging world and an everchanging house.

Respond now!

No time to wait, I've changed my mind again.

The new demands renewable choices.

Software upgrades your house.

Plug it in and plug it on.

Optional extras for more power, more control.

Your house changes, 'At your leisure, madam.'

The future of architecture is the curriculum.

What's next?

"... learn to laugh at accepted solutions in order to change the demands which make them necessary."

Ivan Illich, Celebration of Awareness.

1,000,000 Buildings

In the Industrial Age, architects designed individual buildings.

It was clear who designed what.

It also limited how much designing could be done.

Frank Lloyd was prolific in a long career.

Several thousand buildings, a lifetime's legacy.

In the Information Age, architect's design systems for building.

One small step to software design systems and one giant leap for mankind.

Personalized design for everyone on the planet.

Who will be the first architect to design 1,000,000 buildings?

The creation of computer generated design systems switches the battlefield.

Re-invent the battle.

What is design?

Who is the architect?

The United Nations Centre for Human Settlements estimates almost 1 in 5 people on this planet live in conditions unfit for human habitation. This includes about 100 million people who are homeless, ie. sleeping and eating in the streets.

DYO: Design Your Own

"I wanted to be an architect, but..."

A dollar for every time I've heard that.

In the Information Age, their wish may come true.

In the Industrial Age, architects had an education advantage.

Architects know how to be documented.

On a computer it is access for all to know how.

Walk-through building simulations are a bleak future for Architects.

Glory today, gone tomorrow.

Visualize now where lack of drawing skills prevented.

Creativity and design expertise becomes a game.

Assimilate the pieces as you simulate the whole.

A la "Sim City™".

40 hours a week to earn a living.

40 hours in a week to learn a new living room.

Voila! Instant Architect!

Architecture becomes a game for all to play.

Power tools created the Do-It-Yourself (DIY) boom and made everyone a handyman.

Computers create the Design-Your-Own boom and make everyone a designer.

The stakes have been raised.

Are you still willing to play?

"Everyone of us ... lives closer to the brink of obsolescence. Each one of us that is adult and qualified feels menaced in some degree by the push of new developments which establish themselves only by discarding the methods and techniques and theories that he has learnt to master ... Inasmuch as experience counts for less and knowledge, upto date knowledge, far more in a world of recurring obsolescence, the status of older men falls relative to that of younger men ... The rapidity of change in social conventions and moral attitudes, associated with technological transformations in the mode of living, renders a person's experience of the world a generation ago largely irrelevant to the problems of the day."

Prof. E.J. Mishan, The Costs of Economic Growth.

Client Design Systems

In the Industrial Age, the architect led the client.
Unearth the foundations of what they want.
Size, price and appearance.
Own the process, control the result.
In the Information Age, the client leads the architect.
Systematize the design process, clientize the design system.
"Do it yourself!" said the architect to the client.
Construct a platform for how you live.
Who are you? What's important? How do you do?
Facilitate the process, give away the result.
"A Home-Office You Love" is a client design system.
Read the parable, complete the exercises.
A design brief in writing, in terms to design for.
Save a client money, spend their time.
Save your time for design.
Empower the client, a partner at work with you.
Productivity saving #1.
Where shall we save next?

"Go to the people
Learn from them
Love them
Start with what they know
Build on what they have
But of the best leaders
When their task is accomplished
Their work is done
The people will remark:
'We have done it ourselves!'"
2000 year old Chinese poem

Drawing Board Architecture

The by-product of a drawing board is drawing board architecture.

What you see is what you get.

The drawing board method incorporates a horizontal rule and a 45°/90° set square.

Observe closely.

90° and 45° angles in buildings are commonplace.

Draw slices of the building.

Observe closely.

Extruded volumes, neither 2 nor 3, but 2 1/2 dimensions are commonplace.

Draw parallel to the drawing surface.

Observe closely.

Cubic volumes are commonplace.

Have fun drawing a curve.

Observe closely.

Few extruded curves in buildings.

Even fewer 3D curves.

Ever noticed how some clients cannot read plans?

Some people haven't learnt the French language either.

It's a way of thinking.

Plans, elevations and sections are a slice of life.

Modelling 3D forms on a 2D surface remains the challenge.

Computer modelling explodes the previous limits.

"The Renaissance marks the separation of the design sequence from the construction of the building. The effect of this dramatic change was not immediately apparent due to the diverse backgrounds of the notable building designers of the time. Da Vinci, Palladio, Wren, Inigo Jones, Bramante, Brunelleschi, etc., were all involved in various arts and science activities. Architecture was only part of their repertoire."

Jacob Bronowski, *The Visionary Eye*.

Beyond the Esquisse

In the Industrial Age, the Esquisse was dominant.

Sketch plan design.

Got a spare serviette? An envelope?

Designed in an instant.

Designed in France, three centuries ago.

Le Grand Prix de Ecole des Beaux Arts.

Mode de emploi...

Create an initial, small and loosely drawn sketch of the completed building.

Work and rework in increasing levels of detail.

Culminate in construction components.

Particularly suitable when a single method of construction and few different building materials are used.

During the Beaux Arts era, masonry was it.

Multiply materials and divide the effectiveness of the Esquisse model.

Construction suffers.

Style consumes.

In the Information Age, an alternative model is created.

The greatest prize in Architecture will be awarded to those who design the information system that REPLACES Plans, Elevations and Sections.

Re-design your thinking.

Re-design design.

Re-design yourself.

"We continue to do things in a certain way simply because we have neglected to think about them. We have never looked to see if there might be a better way. Why have we neglected to think about the matter? Because the matter was never a problem and never presented any difficulty, so there was no reason to give it thinking time or thinking attention."

Edward de Bono, Serious Creativity.

Beyond Plans

In the Industrial Age, the plan was the generator of architecture.

The walls were vertical extrusions of that plan and cobwebs sat upon the ceiling.

That is how a plan works.

Create the shell and interior design it.

Furniture as independent objects in the room.

Furniture to seat the detached observer.

Rooms defined the architecture.

In the Information Age, the shift to how is a shift from the ground plane.

A new conception of form and space.

When furniture and building merge as one, the floor is merely the plane of gravity.

Interactive furniture.

A fleet of wall and ceiling planes change the design of the airport.

Air traffic control gives permission to fly in all directions.

Your spatial co-ordinates please.

Your Ex, Whys and Zees.

Peel the bed from the wall or lower it from the ceiling.

A caravan of extravagances, opening and shutting to suit the requirements.

"If we can realize, from the outset, that our ordinary consciousness is something we must of necessity construct or create in order to survive in the world, then we can understand that this consciousness is only one possible consciousness. And if this consciousness is a personal construction, then each person can change his consciousness simply by changing the way he constructs it."

Robert Ornstein, *The Psychology of Consciousness*.

From 'What' to 'How'

In the Industrial Age, the rate of change was significantly slower.

Build a building and leave it be.

As it was designed, as it was built, as it remained.

Few changes changed few buildings.

Generate the plans, elevations and sections as the completed building form.

Describe 'what the building looks like.'

What else is there?

In the Information Age, times have changed.

When did you first use a computer?

Times have changed quickly.

Times are changing even more quickly.

Your ability to act is what counts.

Unpredict-ability requires flex-ability and change-ability.

'What' changes constantly.

'How' is an ongoing inquiry.

Shift to 'how a building looks'.

How it looks is how it's built is how it's used.

Switch from what the product is to how the process occurs.

"All means of interchange and of human interassociation tend to improve by acceleration. Speed, in turn, accentuates problems of form and structure. The older arrangements had not been made with a view to such speeds, and people begin to sense a draining away of life values as they try to make the old physical forms adjust to the new speedier movement."

Marshall McLuhan, Understanding Media.

Information Structure

In the Industrial Age, quantity was rewarded.
Production by mass was the operating practice.
You're only as good as your last job.

In the Information Age, quality is rewarded.
The physical manufacture is now presumed.
Shift to the information component.

Information is self-multiplying.
Generating information is now presumed.

Is its structure more content than the importance of
information?

The structure of information is more important than its content.
Shape it, don't fix it.

You're only as good as your current information.

"With the coming of the Information Society, we have for the first time an economy based on a key resource that is not only renewable but self-generating... Running out of it is not a problem, but drowning in it is."

John Naisbitt, Megatrends.

The Clip Art Design Method

In the Industrial Age, you started with a clean sheet. Literally.
'Back to the drawing board' means to start all over again.
Start and finish.
Past, Present and Future.
Re-invent the wheel.
Redraw, Redraw and Redraw.
Finish and start again.
In the Information Age, modify everything.
A new starting point that neither starts nor stops.
The time is always now! Be present.
Shape, guide and structure the flow of information that is already available.
Instant design prototypes.
Could the Coliseum become the basis of your next design?
A donut? A dog?
Morph the unconnected & existing into the new and the inventive.
A single column, drawn once in the history of your company.
Re-use, Re-use, Re-use.
Clip Art is the modern day library.
Borrow at your leisure, modify at your will.
Is it any wonder copyright is dead?
Have your cake and eat it, eat it, eat it..
May your designs breed like rabbits of all different shapes and sizes.
Go forth and multiply!

The first mark placed on the prepared surface is arbitrary. It is the only arbitrary mark in the whole process that moves toward that point when the artist decides, by the act of no longer adding further marks, that no further change shall occur. This condition could be called *stasis*. The work is deemed finished. After the first and arbitrary mark all other additions are cumulative and recategorize the previous collection of marks into a new structure. In other words the totality of accumulated events occurring on the painting's surface always adds up to ONE; one totality or singularity.

Rodick Carmichael, Orienteering: Painting in the Landscape. (Carmichael's emphasis)

The Feedback Spiral

In the Industrial Age, feedback was known and not practised.

Too slow to be effective.

In the Information Age, feedback makes you God.

Evolve your own species of buildings.

Combine one part existing knowledge with one spiral of feedback.

Set the dial to feed forward to where it is going.

Update me!

Tell me more!

Post-occupancy studies - before the building leaves the designer's office!

The client is important because they pay for this project.

The building's users are more important because they will reward you with the next project.

When did you last speak with them?

Mary, Mary, quite contrary, how does your business grow?

Word of mouth is feedback.

Systematize and provide incentive.

A referral a day keeps the creditors away.

There is no failure, only feedback.

Neuro-Linguistic Programming.

Building Systems

All buildings are systems.

In the Industrial Age this meant Standardization.

In the Information Age this means Customization.

A system is a framework for conceptioning what is going on.

How does it work?

How can we do it again?

The humble brick is an elementary system.

Linear, sequential and limited to vertical planes of compression.

It's days are numbered in the Information Age.

Repetitive industrialized building systems of the 50's and 60's leave a bitter taste.

A place to start.

An architect must walk before running.

Step forward with these...

Forget the permanent, the finished result and the individual pieces.

Take away a take-away instead.

Flexible, adaptable, disposable, re-usable, recyclable, demountable, temporary, portable.

I want an overall package.

I want it how?

I want it now!

Necessary steps toward richly customized 'one-offs'.

Fit the form and conception the construction.

"But what if the function is no longer chung-chung-chung standardization producing the same-same-same? If the function is the production of information - and the definition of information is 'a difference that makes a difference' - you're not doing the same-same-same anymore. Now you're turning out a different different difference, because if it's not different it's not information."

Peter Schwartz in Stewart Brand, The Media Lab.

The Crystal Palace

Joseph Paxton's Crystal Palace for The Great Exhibition of 1851, stands tall as the shining light for systems buildings.

- **Modules**

Designed to fit a structural and cladding module.

- **Rapid Erection**

989 884 square feet in 39 weeks.

- **Dry assembly**

- **Interchangeable Components**

- **Demountability**

The building was dismantled in 1852 and re-erected on Sydenham Hill in 1854.

- **Mechanized erection**

The use of mechanized erection techniques included a roof glazing wagon.

- **Own Scaffold**

The building's framework was its own scaffolding.

Once four columns, connecting pieces and girders were in place, the structure became self-supporting.

- **Multiple Configurations**

The entire building, including the arched transepts and vaults, were constructed from the same set of components.

A contemporary of Paxton's, even suggested that the components could be transfigured into a 1000 foot tower! However, the cast-iron supports would not have been strong enough to uphold such a structure.

- **Prefabrication**

All components were prefabricated, mass-produced and standardized.

- **Unified Building Team**

The designer, engineers and suppliers worked as one organization.

This building was conceived almost 150 years ago!

A non-architect leads the way.

Look outside the box, there could be more.

From Handmade to Automation

In the Industrial Age, the motor car epitomized the manufacturing method.

Set and forget, out pops a new one every few minutes.

Architects missed this Industrial Revolution.

The handcrafted building remains.

In the Information Age, architects customize the manufacturing process.

Personalized design at its zenith.

Transform construction to assembly.

Dry the wet.

Prefabricate.

Demount.

Recycle or re-use.

Throw out the saw, add a laser, tighten the tolerances, heave-ho the imprecise materials, add a robot.

The architect with design instructions on his motherboard can steer the ship toward automated construction.

Press that button and out it pops, installed on site.

Instant personalized buildings!

Take this pleasure cruise to uncharted waters and buried treasure awaits.

Re-design architecture from the tools up.

Design-Your-Own industry.

Now there's an opportunity.

"...we realized that we had time to design an airplane with something really new in terms of passenger comfort - something that would at least give us a substantial competitive advantage over other airlines. Obviously, we wanted the best technology, too, but what we were really looking for was what we called the "Passenger Pleasing Plane," or the "3-P."

...We soon realized why the Three-P plane had never been produced. Like any other business, airplane manufacturers had to please their customers - the airlines. And airline executives were so caught up in technological innovations that they hardly gave a thought to making the passenger's ride more comfortable."

Jan Carlzon, Moments of Truth.

From Monument to Temporary

Let us build a monument to the death of 'buildings as monuments'!

In the Industrial Age, 'built to last' was the motto.

The building may stand tall forever.

The materials may last a millennium.

Make-up a cosmetic uplift occasionally.

Yet, we've all got to go sometime.

In the Information Age, the question is not if, but when.

Like our physical presence, flexibility will keep us living longer.

An open mind and a supple body, the keys to maintaining a viable architecture.

How are we going to pull this baby down?

What do we do with it then?

Would you commute in a 100 year old aeroplane?

"Buckminster Fuller... once described New York as a 'continual evolutionary process of evacuations, demolitions, removals, temporarily vacant lots, new installations and repeat.' This process is identical in principle to the rotation of crops in farm acreage - ploughing, planting the new seed, harvesting, ploughing under, and putting in another type of crop."

Alvin Toffler, Future Shock.

The Functioning Aesthetic

In the Industrial Age, the perspective model reigned supreme. The detached viewer separated what a building looked like from what it was.

The contextual push of the flamboyant 80's was a misnomer. Build for today, free from image and the context will be satisfied. The international context demands this.

In the Information Age, the Uncertainty Principle dominates.

Our perception is not what we see.

Our perception is what we recognize.

Things look the way they do because that's how they work.

The appearance is the sum of the total system at work.

There is no superfluous detail in nature.

Morphology may be more useful than history.

Return the classical column to its biological origin.

Nature as model is all we've got.

What does a house look like?

What does a spacecraft look like?

What do you look like?

How does a house look like?

"For each aspect there are responses of form. Consider the relationship of a maple or an elm to the sun. These trees are in a temperate climate and need to absorb a great deal of sun. They have wide leaves arranged in a spiral grouping that exposes the maximum area of leaf. In contrast the olive tree has a thin leaf. One side is light, the other dark. The leaf rotates so that the light always faces the sun, because it is essential to its survival that heat not be absorbed and that moisture be preserved. The same is true of the many cacti, which turn themselves perpendicular to the light. In the forest we find plants that usually grow in the shade under trees develop larger and broader leaf forms and spread themselves. Each plant develops a form that responds directly to its survival needs."

Moshe Safdie, Beyond Habitat.

Computer Modelling

In the Industrial Age, a line is a line.

A neat splodge of ink that follows the path of it's ruler.

The line represents what you want it to be.

In the Information Age, a line is a group of pixels.

A picture element is data that has the power to inform.

Pixels represent the mathematical model of the world that you have created.

Be it a summary graphic of over 1000 experiments.

A collision between two spiral galaxies that would normally occur over a one billion year timeframe!

An Ozone hole no one knew existed.

A building?

Computer modelling is performance.

Test and pre-test.

Test the options and optimize the tests.

Generate and explore new patterns.

The environment is no longer an issue for architects, it is architecture.

What becomes How.

Clothing is an extension of the skin.

Model the hand and it fits like a glove.

Architecture is an extension of the skin.

Model the body and it fits like a house.

"The effects of technology do not occur at the level of opinions or concepts, but alter sense ratios or patterns of perception steadily and without resistance."

"In terms of the ways in which the machine altered our relations to one another and to ourselves, it mattered not in the least whether it turned out cornflakes or Cadillacs."

Marshall McLuhan, Understanding Media.

A Real Live Building

In the Industrial Age, buildings resisted nature.
The shopping mall is the Industrial Age.
Step into my parlour said the developer to the shopper.
Remove the natural distractions, only windows to the sky.
Sit and watch the flow of people.
Construction was compressed and static.
Seal up the box, mechanize the air flow.
Resistance encourages disease.
Sick building, sick.
Passive and permanent.
In the Information Age, buildings come to life.
Living, growing, merging and flowering.
Responsible to the environment.
Responding to the environment.
Sit and watch the flow of buildings.
A new building response every minute of the day.
Moving to attract the sun like a leaf on a tree.
Filtering the light like the leaves on a tree.
Filtering the air like a leaf on a tree.
Tensile forces flowing in the breeze like a leaf on a tree.
A new building response every minute of the night.
Shopping has become an interactive, electronic network.
Buildings have too!

“300 years of technology came to an end after World War II. During those 3 centuries the model for technology was a mechanical one... Since the end of World War II, however, the model of technology has become the biological process, the events inside an organism. And in an organism, processes ... are organized around information.”

Peter Drucker, Innovation and Entrepreneurship.

A Pattern of Spatial Perception

Where are we going?

The rear-view mirror of history suggests that outside is becoming in.

Sheltering in a cave.

Pavilions open to the air.

Enclose the space and increase the glass.

Total glass and outside is visually in.

The bi-furcation point is where the action is.

In architecture the action is where 'out is in' and 'in is out.'

The wall is our skin.

Dissolve the boundary and let the sun move in.

When the sun shines, food grows.

The Green House Greenhouse.

Food is fuel for living, or dying.

Health goes beyond taste.

Architecture is space for living, or dying.

Which are you causing?

Architecture is environment.

"A structural innovation to break the limitation of the Roman arch did come... The invention is a new form of the arch based not on the circle, but on the oval. This does not seem a great change, yet its effect on the articulation of buildings is spectacular. Of course, a pointed arch is higher and therefore opens more space and light. But, much more radically, the thrust of the Gothic arch makes it possible to hold the space in a new way, as at Rheims. The load is taken off the walls, which can therefore be pierced with glass, and the total effect is to hang the building like a cage from the arched roof. The inside of the building is open because the skeleton is outside."

Jacob Bronowski, *The Ascent of Man*.

From Centralization to Decentralization

In the Industrial Age, centralization was the model for space.
Co-ordinate and control from a single location.
Factories, cities and communism.
The French Revolution had a centrifugal force.
Paris as the seat of government.
The Ecole des Beaux Arts as the seat of building design.
The Esquisse as the seat of the design process.
The Information Age is a decent time and space.
Decentralize is the pattern for space.
Satellites circumnavigate the globe.
Information as the fuel for life is accessible where-ever you may be.
Musical chairs is the game to play.
Sit anywhere you choose.
Your Home-Office is where-ever you want to work.
Architecture that walks and talks.
Release the reins on specialized rooms and furniture.
Flexibility and multi-purpose has returned.
Un-build the freeways, the peak hour rush is over.
Cities as we know them, are no longer needed.
The skyscraper as the city's tombstone, an edifice of a previous age.
Unfolding a new architecture in a new time and place.
Refolding the architecture for some place else.
Where you're at, is where it's at.

"The world is such-and-such or so-and-so only because we tell ourselves that is the way it is. If we stop telling ourselves that the world is so-and-so, the world will stop being so-and-so."

Carlos Castaneda, A Separate Reality.

The Urban Performance

In the Industrial Age, the urban environment was designed by bureaucrats.

Representatives selected by the people.

Vote one, vote all.

Separate and divide.

Divide and conquer.

A zone for this and a zone for that.

A factory here and not there.

Not this with that.

In the Information Age, the urban environment is designed by the people.

Governments no longer control the economy.

The Internet is a self-selecting system.

Urban Planning by participation.

Vote one, vote all the time.

A single zone of everything.

A factory here and a house next door.

A mix of forces meeting performance standards.

This goes with that, goes with this.

“Our electrically-configured world has forced us to move from the habit of data-classification to the mode of pattern recognition.”

Marshall McLuhan and Quentin Fiore,
The Medium is the Message.

Where It's At

In the Industrial Age, the basis of production was location dependent.

Workers travelled to where the work was at.

'Come to me', said the factory to the worker.

'Come to me', said the city to the factory.

Architecture stayed put, built on a solid foundation.

Fixed in place, inside and out.

In the Information Age, location is independent of the basis of production.

What is work?

Where is work?

Learning a living in your own head.

Have laptop will travel.

Walking talking buildings.

Mobile phones, mobile homes.

Plug-in homes, plug on homes.

A permanent tent city.

Blow-up dolls, blow-up houses.

Architecture on the move.

Transportable, demountable, disposable.

You name it and create a new architecture.

A caravan of possibility.

A suitcase full of opportunities.

Where it's at is what you're wearing out.

"When President Lincoln was shot, the word was communicated by telegraph to most parts of the United States, but because we had no links to England, it was five days before London heard of the event. When President Reagan was shot, journalist Henry Fairlie, working at his typewriter within a block of the shooting, got word of it by telephone from his editor at the *Spectator* in London, who had seen a rerun of the assassination attempt on television shortly after it occurred."

John Naisbitt, *Megatrends*.

From Flatland to Airspace

In the Industrial Age, the drawing board shaped our world.

A 2D model of reality.

Our land became a grid of lines.

Our cities a grid of streets.

Our cars drove that pattern into the ground.

Pick your address and buy that plot of land.

Land rights for cashed-up investors.

Maximize your investment, extrude vertically.

A chocolate cake built layer upon layer, upon layer.

Would you like a set of balconies to go with that box of flats?

Same context, same design.

Different city, different street corner.

In the Information Age, a return to tribal space.

A pre-literate reality of a single universe.

Pick your view and buy that parcel of air.

A visiting permit in space.

A 3D address book.

A new reality of electronic space.

Transportation without moving a muscle.

Shop, work, party, games.

Friends visiting without leaving home.

First the TV dinner, now a computer lunch.

Have every Christmas at home.

Who said the telephone would never work?

“Our ‘agreement’ on reality is subject to common shared limitations that evolved to ensure the biological survival of the race. All humans may agree on certain events only because we are similarly limited in our very structure as well as limited in our culture. Like the double-seeing son, it is very easy for us to confuse our common agreement with an external reality. If everyone ‘saw’ double, for instance, we would believe that two moons existed.”

Robert Ornstein, *The Psychology of Consciousness*.

Materials and Colors

In the Industrial Age, architects chose their materials and the color came too.

Naturally, they were naturally available.

In the Information Age, architects design their materials and choose their colors.

The alchemists have returned to the laboratories.

Keeping up with the Jones's is easier than keeping up with all the new materials.

Specific properties for specific properties.

Be less tolerant and expect higher performance.

From inherent to complete choice.

From a black and white choice to fully expressed color.

What color is a house?

How is your house colored?

"... the modern problem is no longer to design a structure from the materials, but to design the materials for a structure."

Jacob Bronowski, *The Ascent of Man*.

The Appearance of Things

How do you read a design drawing?

By what it looks like.

A personal interpretation of marks on paper.

There is no other way.

In the Industrial Age, truth was absolute.

What I see is what I see.

Drawing the appearance of buildings allows superfluous details to be added.

Form follows function plus some more.

In the Information Age, there is no truth.

The act of perceiving changes what is being perceived.

Ask an eye-witness.

I think what I see is what I think I see.

The map is not the territory.

The menu is not the food.

The building is not the drawing.

What a building looks like is not based upon what we see, it is based upon what we think.

Believing is seeing!

Form fits function.

There is no more.

Beyond the Electronic Drawing Board goes beyond appearance for appearance sake.

Cash in the sacred cow.

"This is not a pipe, but a drawing of a pipe," "This is not a pipe but a sentence saying this is not a pipe." "The sentence 'this is not a pipe' is not a pipe,"

Michel Foucault, This is not a Pipe.

The Beauty Myth

In the Industrial Age, cause and effect could be divided.

Black and white.

This and that.

Classify the boxes into separate categories.

Control the printing press, control the taste.

Architecture was different from mere building.

Beauty and emotion was the departure point.

Beyond the utilitarian.

An admirable pursuit elevating mere building to mere architecture.

In the Information Age there is no beginning or end.

No printing press to control.

In a sea of opinions who cares how you feel.

Mere patterns of recognition or not recognition.

The sum of the whole is greater than the sum of the parts.

The utilitarian is all there is - we'll add our emotions anyway.

Beauty is like a rainbow, it only exists in the mind of the observer.

A haphazard pursuit to cause.

The uncontrollable eyes of the beholder reign supreme.

Reality occurs in your head.

Welcome to your real world.

"At the high speeds of electric communication, purely visual means of apprehending the world are no longer possible; they are just too slow to be relevant or effective."

Marshall McLuhan and Quentin Fiore, *The Medium is the Massage*.

The Language of Architecture

In the Industrial Age, the language of architecture was the classical one.

Rebuild the Parthenon.

Replay the old world.

Ornament and decoration of centuries ago.

The step from stone to new materials cut the link.

The bride stripped bare.

Without the frills, the dress was plain.

Consume the marriage.

Begat the modern box.

A window full of offices.

A window less place to shop.

The classic language has become mute.

Nothing more to say.

Fill the silence with a new dialogue.

In the Information Age, language structures are the backbone of discussion and practice.

Music.

Mathematics.

Art.

Architecture.

What language shall we speak?

A dialogue between form and construction is a language a computer can speak.

"From its very inception artists conceded the ability of the photographic process to record the appearance of things. By assuming that the rules that governed classical painting were axiomatic, photographers at first tended to ape painted pictures, with some ludicrous results.

Later the film-makers made the same assumption and attempted to photograph stage-plays. It was not long, however, before the early cinematographers also appreciated that they were working with a new language."

Rodick Carmichael; *Orienteering: Painting in the Landscape.*

A Pattern of Form Conception

In the Industrial Age, 2 1/2 D extrusions were in.
This is the language of the drawing board.

Lines.

Planes.

Cubes.

Conceive and deliver your building.

A box with ribbons.

Mass produce with the standard industrial tools.

Use a saw and have fun cutting out a circle.

The tool dominates.

The Medium is the Message.

In the Information Age, the computer is the tool.

It is objective, binary and mathematically based.

How do you describe an object on a computer?

Very precisely.

The loose sketch is a loose fit.

Re-invent the battle.

Describe a curve, add a laser.

Anything is possible.

Shift the form to 3D.

Marry the form and construction system.

Conceive new custom.

Bring forth the birth of a new age.

Celebrate architecture.

Celebrate life.

“The growth in understanding of spatial order seems to follow closely man’s own evolution as a conscious being. First as a tool of orientation, the ‘where’ of things, and eventually becoming the ‘how’ inherent in things.”

Keith Critchlow, Order in Space.

Geometry

In the past there were strong ties between geometry and architecture.

The Greeks began from a single point in space.

Polar Co-ordinates.

The Gothic Cathedrals were built as layers.

2D templates guided the master masons.

The Renaissance modelled in 3D.

Platonic Solids.

Timber houses are the offspring of the Renaissance.

Cubes and $\sqrt{2}$.

The Sydney Opera House is the skin of an orange.

More 3D curves.

Antonio Gaudi turned architecture upside down.

Non-linear 3D curves.

What's next in a world of chaos and complexity?

Who knows how?

The biggest prize awaits.

The trick is the fit.

Construction and Form.

It must be useful to be of use.

“Since the time of Newton’s Opticks, painters had been entranced by the colored surface of things. The 20th century changed that. Like the X-ray pictures of Röntgen, it looked for the bones beneath the skin, and for the deeper, solid structure that builds up from the inside the total form of an object or a body. A painter ... is engaged in the analysis of structure ... the interest has shifted from the skin and the features to the underlying geometry.”

Jacob Bronowski, The Ascent of Man.

Design Systems

In the Industrial Age, a system for design was sacrilegious.

Surprise! Surprise!

The great architects have already travelled this path.

Frank Lloyd was Wright.

Three houses from one plan.

'House for a Family of \$5000-\$6000,' 'Ralph Jester' and 'Vigo Sundt.'

Squares, Circles, Triangles.

A prolific system for prolific success.

In the Information Age, the sacred cow has been sold off.

Beyond the Electronic Drawing Board is a land full of design systems.

Conceptual form as the deep structure.

The construction system as the surface structure.

A perfect fit.

Custom design for all customers.

Architecture is affordable to all.

Architects are celebrated by all.

Making a difference to the planet.

"It has long been known that science is only one of the methods of studying the world around us. Another - complementary - method is realized in art. The joint existence of art and science is in itself a good illustration of the complementarity principle. You can devote yourself completely to science or live exclusively in your art. Both points of view are equally valid, but taken separately, are incomplete... They reflect different, complementary aspects of human experience and give us a complete idea of the world only when taken together."

Leonid Ponomarev, In Quest of the Quantum.

The House of Profits

How's business?

How's the housing market?

Up and down like an economy.

In the Industrial Age, the elite afforded an architect.

Others went to the suburbs.

Colonial look-a-likes on every corner.

Too expensive for an architect?

No, the design show was simply too slow.

Out of time, out of money, out of reach.

There goes the housing market.

Increase efficiency and new opportunities arise.

In the Information Age, architects design systems.

The architect implements the system or DYD.

The clients do it themselves.

The housing market is revisited.

The pot of gold is on every doorstep.

Architecture as business is design efficiency.

Accelerate the process, create new markets.

Franchise the architect.

If you don't, someone will.

Another sacred cow, sold at the market.

"A successful executive visited his old business professor while attending a class reunion. He glanced down at the corrected exams on the professor's desk and exclaimed, "These exam questions are the same ones you gave us 25 years ago!" The professor calmly replied, "I know, I know. The questions are always the same, but today the answers are different."

Skip Weitzen, Hypergrowth.

Architecture as Information Business

In the Industrial Age, the whole business was drawing plans.

A new client, a new project, new income.

Big occasional payments.

Fees for service, on the job R and D.

In the Information Age, the business is everywhere but the drawings.

Then again, even drawings.

Michael Graves sells his drawings without building them.

Sell everything, including the expertise for the kitchen sink.

Whatever others will pay for is the basis for business.

Package as bits and PC's.

Travel the world.

The Internet is Internentional business.

What do architects know about?

Find out, make it up.

Package and sell.

Produce your service and service your produce.

Packages that stand alone and sell themselves.

COD for R and D.

Daily cash flow soothes the financial nerves.

It's all information.

It's all software.

That's business.

There is an old story of a boilermaker who was hired to fix a huge steamship boiler system that was not working well. After listening to the engineer's description of the problems and asking a few questions, he went to the boiler room. He looked at the maze of twisting pipes, listened to the thump of the boiler and the hiss of escaping steam for a few minutes, and felt some pipes with his hands. Then he hummed softly to himself, reached into his overalls and took out a small hammer, and tapped a bright red valve, once. Immediately the system began working perfectly, and the boilermaker went home. When the steamship owner received a bill for \$1000 he complained that the boilermaker had only been in the engine room for fifteen minutes, and requested an itemized bill. This is what the boilermaker sent him:

For tapping with hammer	.50
For knowing where to tap:	\$999.50
Total:	\$1000.00

From Specialist to Holistic

In the Industrial Age, specialization was it.

Know more and more about less and less.

Left brain, left.

Specialized machines required specialized skill.

Specialized rooms.

Specialized furniture.

Specialized knowledge was prized.

Separate and conquer your small portion of the world.

In the Information Age, the holy generalist is reborn.

The hole world is re-connected.

Recognize the pattern.

No need to know anymore. Find it on-line!

Right, brain?

The computer is all tools and one generalized method of operation.

A Universal tool for all occasions.

The knowledge base is built in.

Rooms dissolve.

Structure and furniture merge.

Manage the multiplicity of moveable modules .

Hey, where did the architecture go?

It didn't go anywhere.

Recognize the new.

All environments merge.

"Birds and insects, through specialisation and drastic physical adaptation over enormous periods of time, have the capacity to fly. Humans step into a plane. Cheetahs run at high speeds. We are relatively slow movers, yet we speed to the Moon. A kit of simple tools will permit us to amplify our puny strength or cut up food outside our mouth. We do not adapt our feet to walk on harsh surfaces; we slip on shoes. Nor do our singularly naked bodies restrict us to a narrow climatic region. We simply put on and take off clothing. We are, in effect, experts in non-specialisation."

Rodick Carmichael, Actuality and Artifice.

From Local to Global

In the Industrial Age, your location was your marketplace.

You knew it well.

Lived there, loved there.

Culture and climate were evident.

Appearance was a mirror of it's creation.

In the Information Age, your location is irrelevant.

Your network is your marketplace.

Boundaries dissolve.

Countries disappear.

Cultures merge.

Climates remain.

Borrow a visual and it becomes a Disneyland.

Superceded by the environment.

The global is a local architecture.

Meet the needs of the people without meeting the people.

Fit into their world.

Stay at home and design away.

Where do you not want to work?

“Together with little Alice we will slip past the smooth, cold surface of the looking-glass and find ourselves in a wonderland, where everything is at once so familiar and recognizable, yet so strange and uncommon.”

Lewis Carroll, *Through the Looking-Glass*.

Creating Change

In the Industrial Age, keeping up with the changes was the game.

Buildings were like rocks.

They sat in one place and stood forever.

Rocks eventually become dust.

Where you're at is where you're at.

In the Information Age, creating change is the only way to keep up.

Invent the future today.

Build on what you know.

Make up what you need to know.

Buildings are like water.

They flow to suit the ever-changing river-bed.

Water is continually recycling.

Where you're headed is where you're at.

Flow to where you want to go.

"Well in *our* country," said Alice, still panting a little, "you'd generally get to somewhere else - if you ran very fast for a long time, as we've been doing."

"A slow sort of country!" said the Queen. "Now *here*, you see, it takes all the running *you* can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"

Lewis Carroll, *Through the Looking Glass*.

No Comparison

The Drawing Board

The Computer

Computers transform how architecture is created.

Transform it or be transformed by it.

Computers allow the architect to extend their job description eightfold through generating a Lifetime Design Brief.

Extend your design service.

Extend your ability to profit.

If you don't, others will.

Computers create design systems and architects design software to assist everyone on the planet.

Systematize individual procedures into global practices and new products.

Accelerate the design process to access new markets.

Too slow and the window of opportunity closes.

The Drawing Board

The Computer

*Computers add intelligence to products.
Redefine & redesign your product and service.
Smarter architects for smarter buildings.
Dumb architects for dumb business.*

*Computers create DYO - "Design-Your-Own" and
allow everyone to be an architect.
Facilitate the pattern or stay one step ahead.
The death of the architect as we know them.
Ignore at your peril.*

*Computers emphasize the design component of
the building industry to heighten the importance
of the architect.
Know what needs to be known.
Customize to your customers.
Package and deliver.
Self-importance is of no importance.*

The Drawing Board

The Computer

Computers allow the architect to automate all aspects of the construction industry.

Instead of designing 'what', design 'how'.

Productively invent new procedures.

Productively invent new tools.

Or play with old toys.

Computers facilitate information interchange.

Feed back and forward.

Structure the flow of your gold.

Banish Medusa or turn to stone.

Computers go beyond plans, elevations and sections.

Model your performance.

Increase your clients' performance.

Add more value or add less business.

Computers go beyond the electronic drawing board.

Go beyond what you know.

Go beyond what your clients' expect.

Go beyond what your industry is.

Re-invent the battle.

The New How

In the Industrial Age, farmers farmed.

Architects architected.

In the Information Age, know how.

Farming or architecture, it's all bits and PC's.

Muster information and muster business.

Know how your future.

Industry.

Business.

You.

Know what, then know how.

Create the knew how.

There's know business like how business.

Acknowledgements

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Sim City is a trademark of Maxis.

The Cover

The numbers on the cover represent the words 'Beyond the Electronic Drawing Board' as Binary or ASCII code - the language of a computer. (Source: <https://en.wikipedia.org/wiki/ASCII>)

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Architecture, Design, Computer Technology, The Information Age

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"The problem is that our thinking, our attitudes, and consequently our decision making have not caught up with the reality of things. ...the level of change involved is so fundamental yet so subtle that we tend not to see it, or if we see it, we dismiss it as overly simplistic, and then we ignore it. ...Without an appreciation of the larger shifts that are restructuring our society, we act on assumptions that are out of date. Out of touch with the present, we are doomed to fail in the unfolding future."

John Naisbitt; Megatrends.

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Author of 'Design Probe', a subscription based newsletter exploring the future of design and technology.

"There is absolutely no inevitability as long as there is a willingness to contemplate what is happening."

Marshall McLuhan and Quentin Fiore,
The Medium is the Message.