



msd

Melbourne  
School of Design

# Quality and innovation in residential building: what role might home modification play?

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# Quality and Value



## What is Quality?

Quality is a judgement of comparison between similar things

Quality can be measured

Quality is not the same as Utility

# Quality and Value



## What is Quality?

Quality is related to Complexity

(non-material dimension that does not use more space, mass, or energy)

Benedikt proposes that combining Quality and Equity produces Complexity

Quality comparisons are also Complexity comparisons

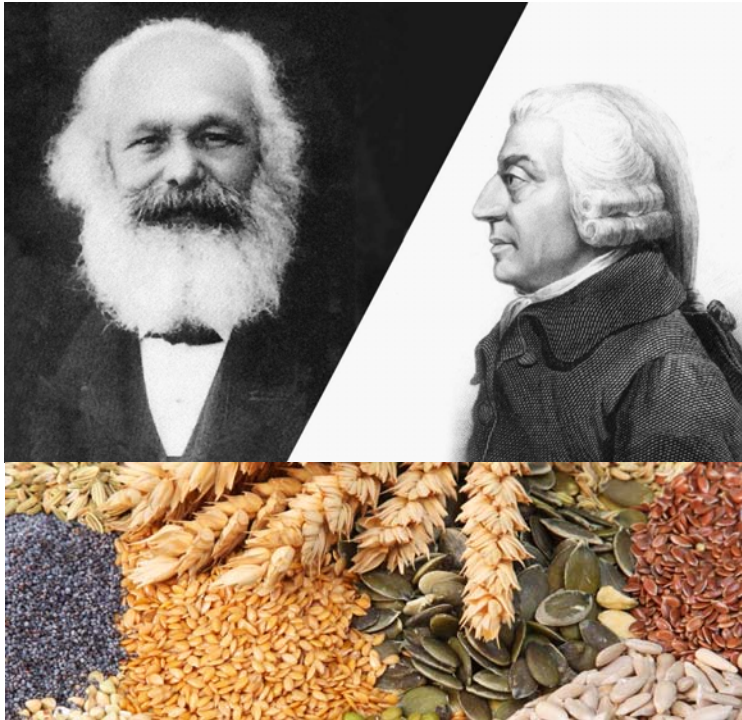
(Benedikt and Oden 2011)

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## What are the components of Quality?

1. RICHNESS of FUNCTION: multiple functions, functional optimisation and connoisseurship
2. RELIABILITY and DURABILITY: protecting complexity from breakdown with redundancies
3. ATTENTION to DETAIL: materials, fixings, nuances – good detailing shows care
4. BEAUTY or STYLE: harmony, proportion, unity in diversity
5. GENEROSITY: giving more than is necessary, exceeding expectations
6. SIMPLICITY: intuition, ease of use, sophistication, freeing up of attention span
7. ETHICALITY: when ethics is added to quality components we increase complexity

# Quality and Value



## And what about Value?

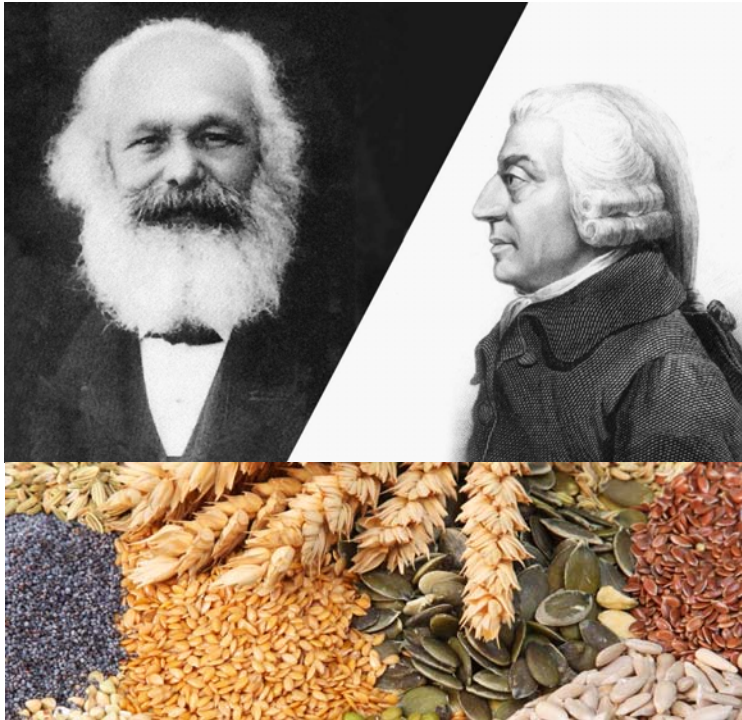
Value is harder to define but

in a wage-based and commodity producing economy  
(Smith, Marx and others)

the value of a commodity has two primary components  
– use and exchange



# Quality and Value



## And what about Value?

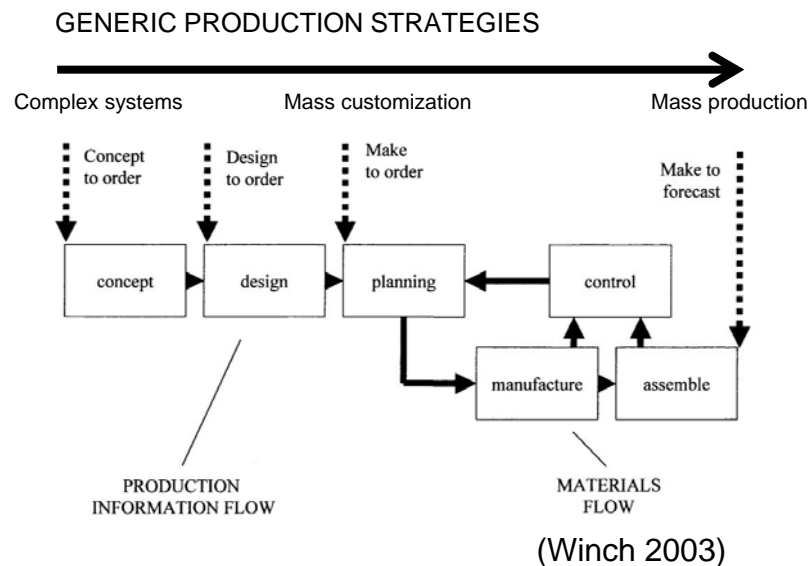
Value-in-usefulness

Value-in-exchange

These are linked – through price – but have a habit of becoming disconnected

## Innovation in the housing industry

Reflects the structure of the domestic housing industry and the way that houses-as-commodities are produced



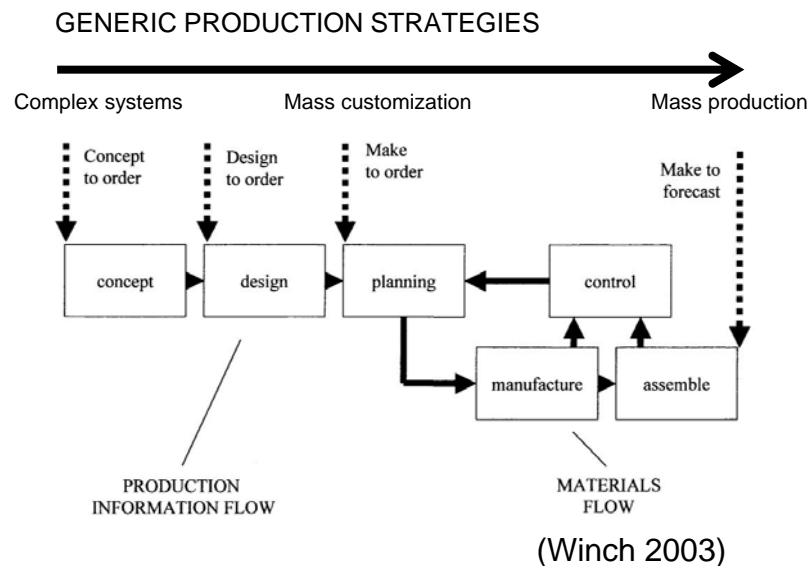
“Innovation is the actual use of a non-trivial change and improvement in a process, product or system that is novel to the institution developing the change”

(Freeman 1989, Slaughter 1998)

# Innovation in the housing industry

## 4 types of innovation systems:

- Market driven system (USA, UK, Canada, Australia)
- Government led system (France, Germany, Italy, Netherlands)
- Social demographic systems (Scandinavia)
- Meso-corporative system (Japan, Korea)



“There is an assumption that innovation occurs due to opportunities created by the competitive forces in the marketplace”

Seadan and Manseau (2001)

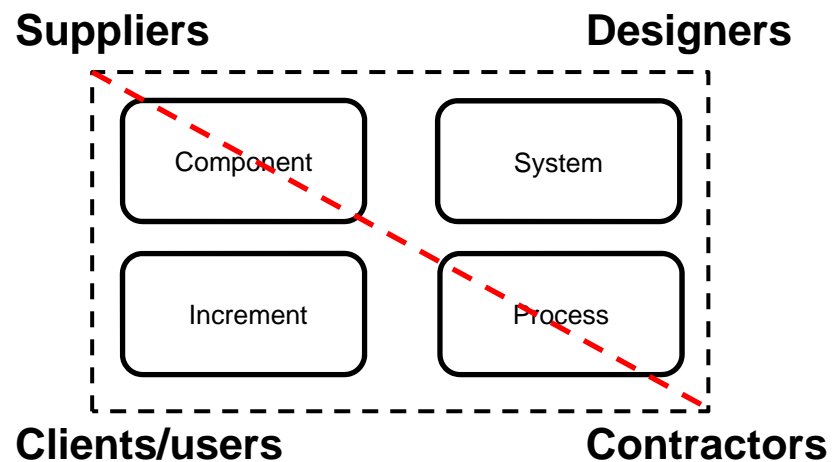


# Innovation in the housing industry

**Innovation activity takes place within a  
'system of innovation'**

- Technological push
- Market pull
- Systems – Firm centred networks, Production systems, Complex product systems

(Slaughter 1998)  
(Seadan and Manseau 2001)



## Innovation in the housing industry

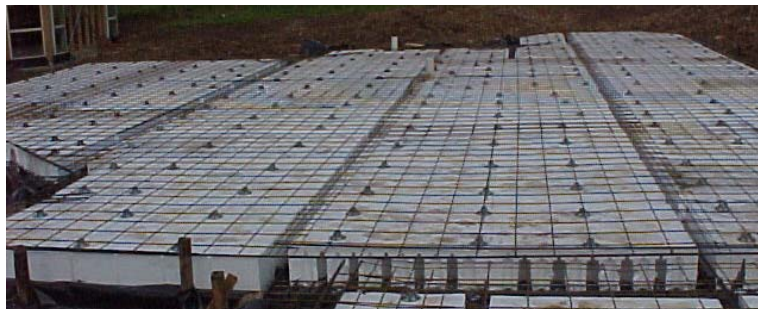
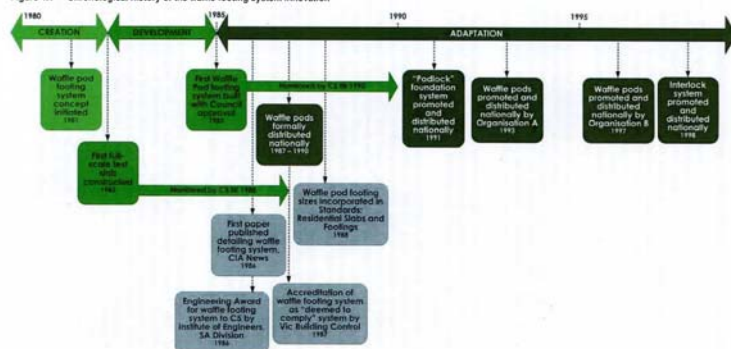


Figure 4.1 Chronological history of the waffle footing system innovation



## High uncertainty innovations and Low uncertainty innovations

- Will it perform as promised in all of my houses over a long period of time?
- How much money will it actually save or cost me?
- How much will potential home buyers value or resist it?
- To what extent will it affect and/or be resisted by subcontractors
- To what extent will it be resisted by the local regulatory system?

(Toole 2001)

## Innovation in the housing industry

Task Factors	Environment factors
End products vary considerably	Munificence – degree of hostility towards the organisation
Long time frames and wide range of conditions	Dynamism – unpredictability and volatility in demand, prices, technology etc.
End products consist of many interacting parts	Complexity – the range of an organisations activities.
Require high levels of tacit knowledge or skills	
Requires interaction with a large number of entities	

“Adoption of an innovation influenced by the relative advantage. For an organisation, relative advantage has two components. The innovations ability to improve a work task and/or assist the organisation to survive its environment.”

(Toole 2001)

## Innovation in the housing industry

OECD innovation classification	Number of innovations
Product	21
Process	21
Marketing	0
Organizational	3
Product and process	2
Product and marketing	1
Process and marketing	2
Total	50

Source: OECD (2005)

Thorpe et al, 2009, p.191

“Since Builders ...tend to undertake most of their work for smaller, private clients, clients are likely to play only a very minor role in the innovation process”

(Thorpe et al 2009)

### So when do examples of innovation typically happen in an industry dominated by small firms?

- Product innovation driven by Manufacturers
- Builders trust Builders
- Internal champions within SME
- Marketing and competition among similar firms
- Regulation

(Dalton et al 2013, Thorpe et al 2009, Manley 2008, Toole 1998)

## Home modification schemes



### Where do home modification schemes fit into this picture?

1. Relationship between use- and exchange-value

Multiple government funding agencies must make an assessment on the dollar equivalent of the value-in-usefulness of a particular modification for a particular client

## Home modification schemes



### Where do home modification schemes fit into this picture?

1. Relationship between use- and exchange-value

That requires a judgement that understands the dynamics of the local building industry as well as client needs

# Home modification schemes



## What is Domestic Building work?

*A practitioner's guide to registration*

Do you have the **skills, knowledge and experience** to apply for registration as a building practitioner in Domestic Building work? To help you, this guide explains the typical tasks of a registered domestic builder. If you are asked to an assessment interview, some of your interview questions will be based on this information.

### What is Domestic Building work?

*Domestic Building work* is work associated with the construction, renovation, improvement or maintenance of a home. A *home* is any residential premises, and includes any part of a commercial building or industrial premises that is used as a residential premises. It does not include:

- a caravan within the meaning of the Residential Tenancies Act 1997, or any vehicle used as a residence
- any residence that is not intended for permanent habitation
- a rooming house within the meaning of the Residential Tenancies Act 1997



- If a builder intends to carry out, manage or arrange the carrying out of domestic building work for another person, and the cost of that work is more than \$5000, then the parties must enter a major domestic building contract.
- A builder must not enter a major domestic building contract unless they are registered as a building practitioner under the Building Act 1993. If the value of the work is \$16,000 or over the works must be covered by domestic building insurance. And they must not carry out the work unless they have been authorised to carry out that work by the registered building surveyor who issued the building permit for the work (when a permit is required).
- A building surveyor must not issue a building permit for domestic building work to be carried out under a major domestic building contract unless they are satisfied (among other conditions) that the work is to be carried out by a builder who is

## Where do home modification schemes fit into this picture?

### 2. Segment of the industry that does this work

Small scale, domestic builders with a variety of building qualifications

<http://www.vba.vic.gov.au/practitioners/building-registrations/domestic-builder/eligibility>



## Home modification schemes



<https://www.reece.com.au/bathrooms>

### Where do home modification schemes fit into this picture?

#### 2. Segment of the industry that does this work

So innovation is unlikely as it is typically product or process driven and at the moment

Product manufacturers seem largely uninterested

Such a small % of the building industry does this work that process innovation does not penetrate the wider industry

## Home modification schemes



Dublin City Council – Strategic Plan for Housing People with a disability

### Where do home modification schemes fit into this picture?

#### 3. Governance and financing environment

Clients: uncertain about building industry and small budgets

OT's: builders not primary focus and working on short timeframes and low budgets

Funding agencies: need value-for-money and so require 'competition'

## Home modification schemes



Dublin City Council – Strategic Plan for Housing People with a disability

### Where do home modification schemes fit into this picture?

#### 3. Governance and financing environment

Favours a system of multiple quotes, small contract amounts, and actors with high levels of uncertainty

# Home modification schemes



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This has the potential to undermine consumer protection built into regulations, as some administrative and legal processes are triggered by dollar value

- Certificate of compliance
- Contract types
- Domestic building insurance

<http://www.vba.vic.gov.au/practitioners/building-registrations/domestic-builder/eligibility>

## Home modification schemes



**But it also undermines almost all of the components of quality mentioned earlier**

Richness of function - Reliability and durability -  
Attention to detail - Beauty and style - Generosity -  
Simplicity - Ethicality

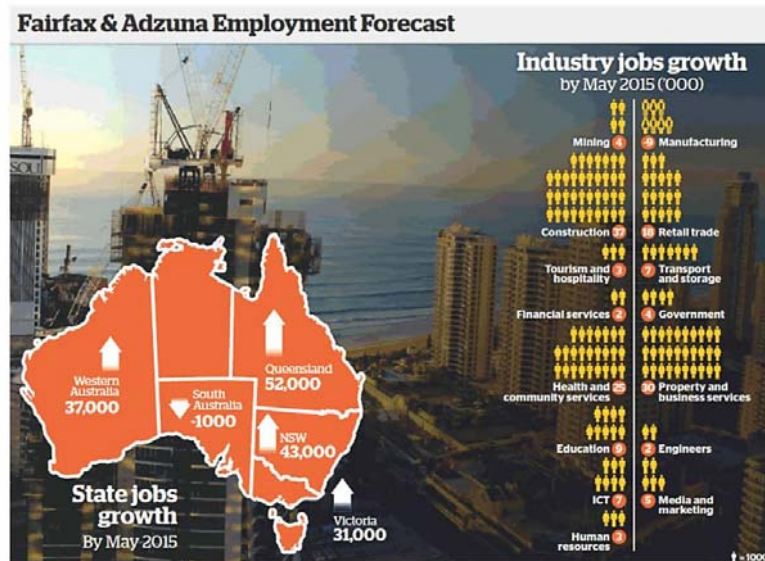
# Construction and the Economy

## Construction as an important employer in the economy

1,061,000 people employed in Construction (2016)

8.9% of the workforce

Only Retail (10.9%) and Health care (12.7%) employ a larger percentage



<https://employment.gov.au/news/australian-jobs-2014-bringing-opportunities-light>



## Construction and the Economy



### Construction as a generator of wealth in the economy

Value of work done: March quarter 2017 (ABS 8755.0)

Building - \$26,343 million  
(Residential - \$17,471 million  
Non-residential - \$8,877 million)  
Engineering - \$19,894 million

Total: \$46,223 million

<http://www.news.com.au/finance/real-estate/eight-melbourne-suburbs-are-on-a-watch-list-for-bargain-hunters-coburg-footscray-frankston-seafood-seddon-and-yarraville/2012>



# Construction and the Economy



**Construction is considered as infrastructure  
– as nation building and productivity growing  
investments**

Labour added per worker (Australia Institute TB33, 2014)

Heavy Civil and Engineering - \$143,684

Building Construction - \$116,609

Construction services - \$81,179

<http://www.motoring.com.au/melbournes-citylink-toll-prices-increase-again-106356/>

<http://www.afr.com/business/infrastructure/ports/port-of-melbourne-privatisation-deal-reached>

# Construction and the Economy



**Construction is also used by government as a stimulus for the economy**

\$5.6 billion National Partnership Agreement – Social Housing Initiative (NPA-SHI) 2009-2012

\$42 billion Nation Building and Jobs Plan 2009 -11  
Building the Education Revolution (BER)  
School Halls - \$14 billion

<http://www.rissalah.nsw.edu.au/>

## Construction and the Economy

**Construction is also used by government as a stimulus for the economy**

\$50 billion for 12 new French designed but Australian built submarines



<http://www.news.com.au/technology/innovation/design/sub-standard-why-the-2000-we-are-each-spending-on-submarines-will-probably-be-a-terrible-waste/>

## Construction and the Economy



**Construction is also used by government as a stimulus for the economy**

\$2.5 billion Energy Efficient Homes Package,  
Home Insulation program (pink batts) and Solar Hot  
Water Rebate Program 2009-2010

*estimated that if completed (it left over a million homes without insulation)  
the program could have saved \$3 to 4 billion on household energy bills by  
2020*

<http://www.news.com.au/national/greens-call-for-return-of-pink-batts-insulation-scheme-after-report-reveals-environmental-and-cost-savings/>



## Construction and the Economy



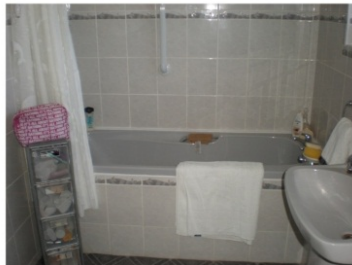
### **Construction is also used by government as a stimulus for the economy**

A major difference with the 'pink batts' scheme was the segment of the building industry involved

Infrastructure, defence, social housing and schools all utilised commercial, not domestic, construction companies

<http://www.news.com.au/national/greens-call-for-return-of-pink-batts-insulation-scheme-after-report-reveals-environmental-and-cost-savings/>

## Home modification as Economic Stimulus



**BATHROOM ADAPTATION-  
WET-ROOM**

client provided feature tiles

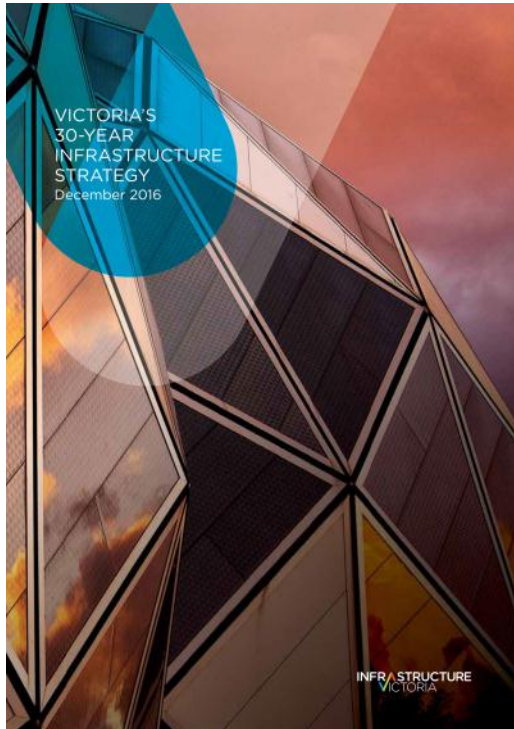
St. Helens Council, UK

**Home modification schemes could be thought of as effectively capital infrastructure projects with the long term aim of improving Australia's housing stock**

\$6.5 trillion - Economic value of Australia's housing stock (March 2016 – NAB)

Improving the use-value (and quality) of Australia's housing stock

## Conclusion



Immediate term is clearly important as the need is great

However the longer term ambition of home modification programs could (and should) be aiming much higher

Quality and innovation require scale

Infrastructure Victoria 30 year strategy December 2016



Thank you



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