Building capacity for sustainable product service systems in Australian industrial design education: a reflection upon contemporary practice

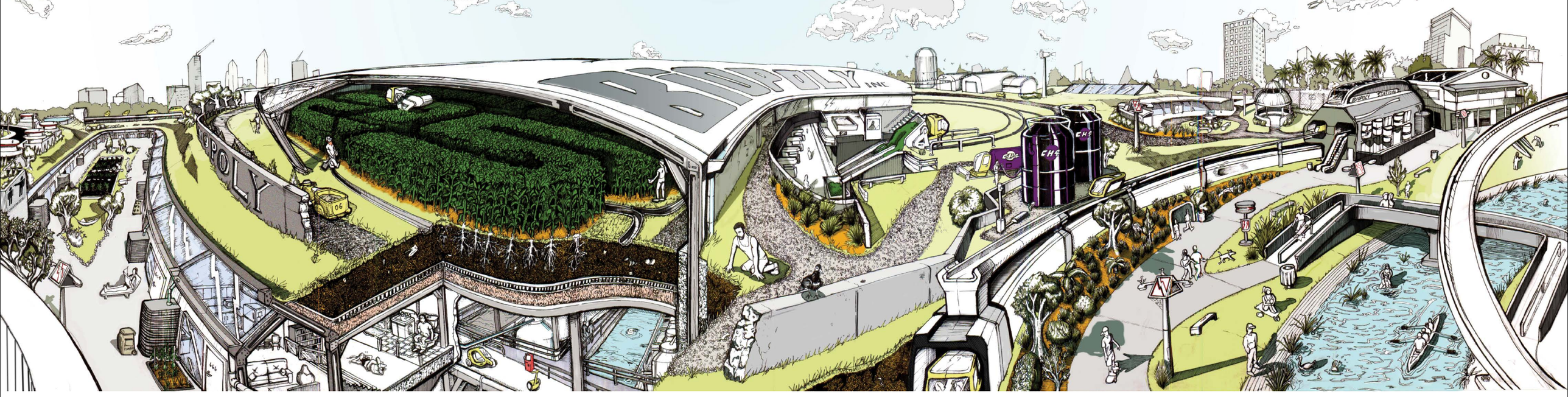


Image: Tyson Savanga, RMIT

Dr. Liam Fennessy, RMIT University, Melbourne, Australia
Dr. Mariano Ramirez, University of New South Wales, Sydney, Australia
Dr. Stephen Clune, University of Lancaster, Lancashire, United Kingdom
Mark Strachan, Swinburne University of Technology, Melbourne, Australia
Simon Lockrey, RMIT University, Melbourne, Australia
Dr. Soumitri Varadarajan, RMIT University, Melbourne, Australia

Product service systems (PSS) have broadened sustainability agendas within industrial design (ID) education in Australia. In building PSS capacities for ID practice the relationships between need and use (service) and the mediating nature of tangible products and their attunement to cultural and contextual conditions get amplified.

This article reflects on our work in accentuating the nature of ID in PSS through education through a series of case study student projects from four universities over the past decade to illustrate the systemic concerns of design in product and service making.

Sustainable Product Service Systems in Australian industrial design education:

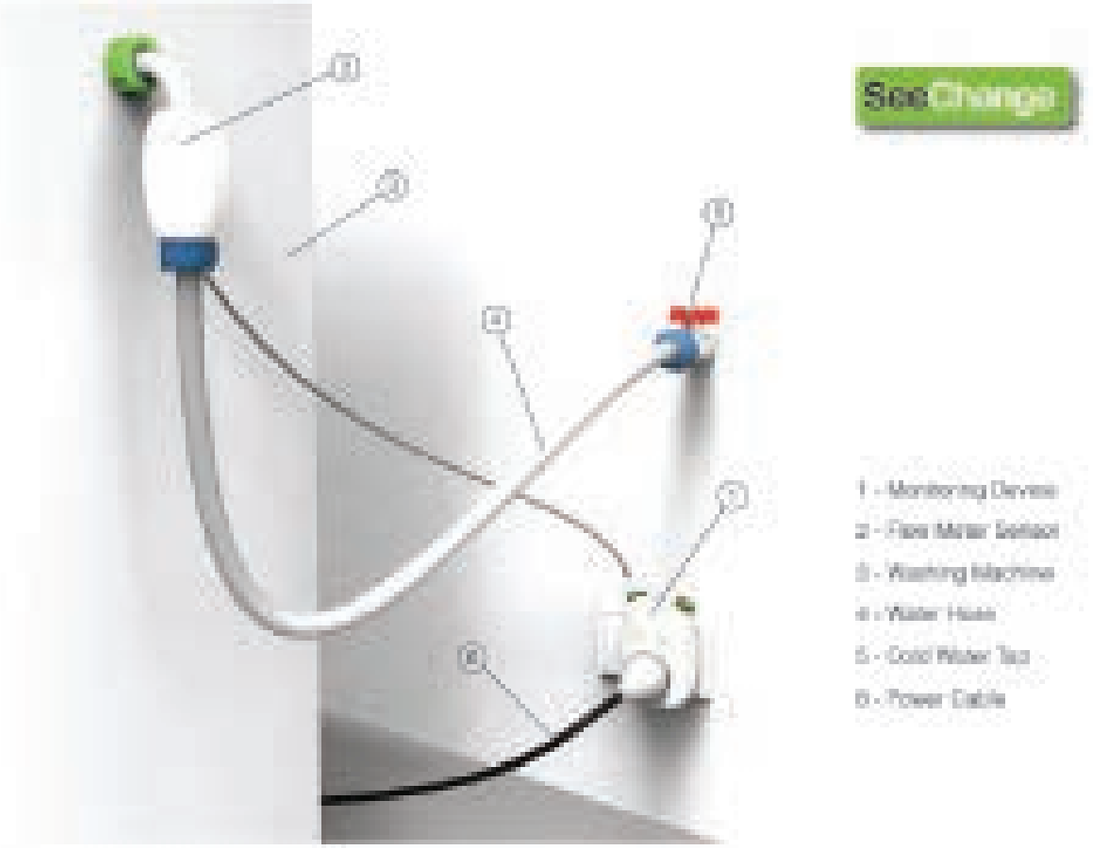
- Re constituting the “client “for design *as* social and environmental sustainability

- Re-positioning Industrial Designers as “agents for dematerialisation”

The Australian situation…….

- One of the most affluent societies on earth
- One of the highest per-capita users of energy
- One of the highest per-capita producers of carbon emissions

climate and resource security



SeeChange by Ashley Smith, RMIT 2012.

Family Home

Busy family that is sustainability conscious but never had a way to track how they were going.

Logs In

Logs into the app using their unique pin. The unique pin is connected to the household account which only they access.

Surveys Overview

Uses the Home screen to view the environmental impact and how much money they have saved this quarter.

Detailed View

Interested in the environmental impact they click on that tab and then are able to view a more detailed breakdown.

Student Sharehouse

Students who are very money conscious and want a way to better plan and monitor their behaviours in order to save.

Logs In

Logs into the app using their unique, this distinguishes this user from the others in the share house.

Timetable

Timetable is set as a shortcut on the home screen and they go straight to this and look at when the next wash is..

Notification

They are sent a reminder notification to make them aware that the next time the washing machine will be used is soon.

SeeChange by Ashley Smith, RMIT 2012.

Tank by Charles Skender, RMIT 2012. Showing user-testing prototype with shower pause valve and flow meter sending usage data to a microprocessor with a data feed to twitter, and images of the final design concept.

Air Drop IRRIGATION

Air Drop Process:

1. Air drawn into turbine

Warm air is driven underground by a turbine intake which, when wind is at a low strength, is powered by the solar-battery unit.

2. Air flows underground

At a depth of 2m, soil temperature drops considerably (around 5 degrees at the chosen site). As soil surrounds the copper piping, the air temperature within can reduce enough to form condensation.

3. Condensation Process

Air travels through copper coils and reacts with copper material placed within the coils. The material creates more surface area for the air to react with and the air temperature drops rapidly as a result, reaching 100% humidity. Large amounts of condensation form and drip down into the underground tank. **Water is efficiently produced from air (see detailed design).**

4. Water collects in tank

The water produced is collected in an underground rainwater tank.

5. Water pumped for irrigation

A submersible pump drives the water produced up the center of the unit and through a low pressure semi permeable hose to irrigate crops via the method of sub surface drip irrigation. Low pressure hoses allow pumps to operate at low levels of power, ideal for a solar powered system.

Airdrop by Edward Linacre, Swinburne University of Technology, 2010.

mobility

Sydney Cycle Hub by Hollie Baigent, Jeff Hunt, Tom Wilson and James Turnbull, UNSW 2010.

health

MummyCare by Phillip Serna, Joshua Cope-Summerfield, Ronald Turinuddin, Raymond Vuong, and Joseph Louis Tan, UNSW, 2010.

ownership and exchange

Bike-shops for The Social Studio, RMIT 2010.

Stuffaware by Ben Hurt, RMIT 2009.

conclusion

The case studies presented offer a glimpse into the diversity of approaches undertaken to tackle complex design situations and enabling S.PSS outcomes including:

- **The development of new, and deployment of emerging and appropriate technologies that may facilitate S.PSS outcomes**
- **A strong focus on the design of products for sharing and systems that enable the sharing of existing products**
- **Identification of existing practices and services that could be amplified through S.PSS approaches**

Illustrative of an engagement with specific problems and contextual conditions particular (but not unique) to Australia, many of these projects indicate a transfiguring of the original proposition for PSS (where a product is redesigned or retrofitted for a service environment) to include virtual solutions and more prominent service components, right through to business blueprints and eventual commercialisation or implementation. The outcomes retain principles of PSS, but progress new approaches that require an extension of traditional ID capabilities in the development and prototyping of service propositions.

Our adaptations of PSS have utilised particular pedagogic strategies in the undergraduate ID education context that may activate and promote to others ways of engaging in the complexity of S.PSS design as strategy for dematerialisation, and include:

- **S.PSS as a new and critical vocational domain for industrial design**
- **Engagement with global networks and competitive forums**
- **Design studios as a mechanism for research integrated teaching**

The Clothesloop project by Rose Duong, RMIT 2014


thank you