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- Systems
- Dysgu
- Modular

This writing will begin to explore the words 'Systems', 'Dysgu' and 'Modular', with reference to artists and thinkers such as Donella Meadows, Issey Miyake, and Johnathon Chapman, leading to the formation of a research question surrounding the ideas identified through the exploration of the three key words, such as metadesign, life-cycle thinking and education.

Systems

"A system is an interconnected set of elements that is coherently organised in a way that achieves something" (Meadows, 2008, p. 24)

This definition of a system by Donella Meadows highlights that within a system there are elements, interconnections and a purposes. Within the fashion system, the elements could be recognised as the designer, garments, production, and the consumer, of which the interconnections could be pattern cutting, colour, materials, fit, function, and the body, and the purpose being to create, design, sell (make profit), clothe, and consume. However, the fashion system being a 'second order system' consisting of multiple variables, is much more complex than this, with many interconnections and even sub-interconnections going undiscovered, and the stated purpose by brands and companies not always falling inline with their actions, meaning that the true purpose cannot always be identified. (Meadows, 2008)

Donella meadows' systems analysis also indicates that within a system there are leverage points; 'leavers for change', (1997) to alter the system for opportunities such as growth and improvement, however highlights that these points are not always 'intuitive', as indicated by the fact that interconnections often go unrecognised and purpose often lost.

The fashion system is a commercial system, of which its design has created the artificial world for which we have become dependent on (Fry, 2009). When looking to achieve sustainability within a system, the correct 'levers for change' (Meadows, 1997) go unrecognised, as the logic of 'reducing unsustainability will increase sustainability' is applied (Ehrenfeld, 2008). This results in strategies such as using more durable materials and producing garments so they last longer, which although signifies sustainability in that the garments themselves last longer, this is not the correct solution for a world that has become dependent on the quick turnover of goods, and seeks for the 'new'. (Fletcher and Grose, 2012)

This highlights another element of systems theory; negative and positive feedback loops. Negative feedback loops are closed, with each variable stabilising each other. Positive feedback loops however are unstable, with the variables causing the same effect in each other (Wood, 2022), such as in the case of the fashion system, with increased production causing increased consumption (or vice versa), causing increased disposal, having a detrimental impact on the environment. Positive feedback loops are identifiably a problem when they go unchecked (Wood, 2022), this is where Donella Meadows idea of 'leavers for change' (1997) comes in, as the system can be shifted to have negative feedback, if the correct strategies are applied throughout the system. However, as previously highlighted, these have yet to be fully identified, with some designers and brands not putting consumer behaviour at the forefront of their designs. This behaviour can be described as a 'shifting the burden archetype' (Ehrenfeld, 2008)

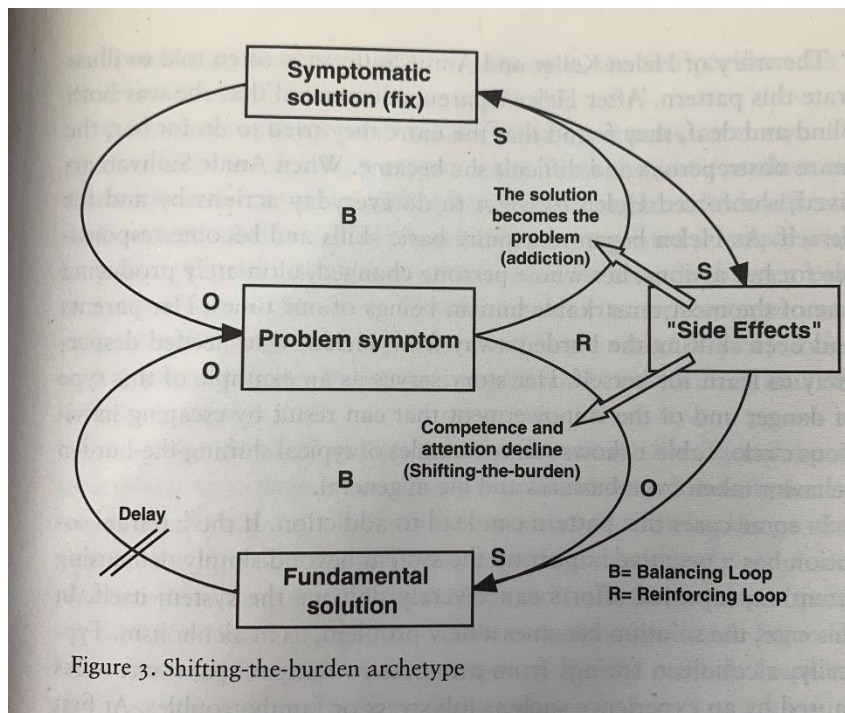


Figure 1, Shifting the burden archetype (Ehrenfeld, 2008, p.15)

The 'shifting the burden archetype' illustrates how the true 'levers for change' go
unrecognised, resulting in not only the original problem going unresolved, but also the
applied solution becoming a problem, meaning the system becomes more complex, and
complex systems are more difficult to navigate, resulting in 'chaos' (Wood, 2022). Producing
'sustainable' garments that last longer in themselves will only result in more garments going
to landfill, and the production of new, albeit using organic and durable materials, will only
continue to strip the world of its resources. (Ehrenfeld, 2008)

Being a commercial system, a balance between consuming and throwing away is required for it to become sustainable, to achieve this, a new way of thinking is to be adapted (Blackwell and Wood, 2022). This idea of 're-languaging' (Blackwell and Wood, 2022) is a key factor of metadesign. Metadesign highlights that in order to achieve paradigm change for sustainability, we need to look outside of the existing paradigms, and cultivate synergies from what we know and learn, (Blackwell and Wood, 2022) through reflecting and analysing

to find new interconnections that more rightfully fit the purpose of design sustainability.

This completely alters the approach to design, and eliminates that possibility of 'shifting the burden' (Ehrenfeld, 2008), as it reveals the complexity of design, and recognises it as a driving force in shaping the world (Fry, 2009).

Dysgu

Dysgu is a word derived from the Welsh language meaning both 'to teach' and 'to learn' (UWTSD, 2022)

As designers, we are responsible for the products that we create. Within the fashion industry, the production and consumption of 'fast fashion' is having a detrimental impact on the environment. This constant turnover of cheap clothes is recognised to be driven by human behaviour, as our metaphysical desires (Chapman and Grant, 2007) of social acceptance have us seeking for them in physical products, and fashion brands profit off of this. Despite this, the fault doesn't necessarily lie in the consumer, the consumers job is to consume, and due to the metaphysical drivers (Chapman and Grant, 2007) for consumption, you cannot rely on reducing consumption to achieve a sustainable fashion industry.

Likewise, eliminating consumption would also mean the elimination of design (Fry, 2017), this is where the responsibility of the designer comes in, through designing sustainable consumption.

Designing sustainable consumption immediately indicates that consumer behaviours need to be considered at the design stage (Gwilt, 2020), as identified, it is what drives

consumption. Therefore, a designer needs to *learn* and understand what drives consumer behaviour, in order to design for it.

The 'throw away' culture we find ourselves in indicates that the value of materials has been lost in westernised cultures (English, 2011), and as identified, increasing the use consumers get out of their clothing is a leverage point to make the system more sustainable. Therefore, looking to other cultures who have a higher respect for material to see what there is to learn about how they utilise fabric through the design of their garments, and apply this knowledge and thinking when designing garments for sustainable consumption.

Issey Miyake is a Japanese designer that is recognised for his sustainable approach to fashion design, and is a prime example of how cultural influence can help achieve this. Miyake's A Piece of Cloth (A-POC) was inspired by the ideology of the Japanese Kimono; 'respecting the integrity of the cloth' (English, 2011). A-POC is an innovative 'zero-waste design' by Miyake that considers the needs of the consumer by bringing them into the design process (Niwdenapolis, 2018), meaning their emotional needs are fuelled beyond initial purchase. It highlights that in order to create his designs, Miyake had to learn and understand consumer behaviour, as well as traditional cultural techniques, indicating the importance of learning or 'dysgu' as a designer.

Anna Wintour, the chief editor of Vogue has previously commented that "Japanese clothes are too difficult to wear" (English, 2011) whilst this suggests an ignorance to other cultures, it may further indicate a designers responsibility to learn and synthesis information from a variety of sources. Issey Miyake himself has noted that his designs are much more popular in Japan than they are in western regions (English, 2011), suggesting that it is just as important that western behaviours are studied and understood in order to create a design

that is synthesised with other cultural references, and therefore accepted amongst consumers. Referring to the idea of 'Dysgu' the designer also has a role of teaching. Whilst designers in the west can learn from traditional Japanese culture, they can also inform the culture of western behaviours, in order for the synthesis of information required for sustainable design.

Issey Miyake's A-POC highlights an importance of pattern making; perforated onto the cloth are the individual pattern pieces ready for the consumer to cut, with empty spaces being utilised as accessories or embellishments (Niwdenapolis, 2018). This idea of 'zero-waste design' is also championed by Timo Rissanen, who highlights that the design process has become fragmented, with patternmaking becoming an entirely separate role, meaning designers no longer require the knowledge of the craft (Rissanen, 2011). However, this separation of stages is undermining the innovation of the fashion industry as the designers are not utilising the ability to control waste through design. This indicates a learning designers need to embark on, to understand the craft of patternmaking, and bring it into the design stage to create sustainable designs.

Alongside Holly McQuillan and Julian Roberts, Timo Rissanen created 'The Cutting Circle'; a research project designed especially to collaborate and learn from each other's approach to zero-waste design. The project allowed the designers to explore and identify new approaches to design through a 'cross-pollination' of ideas, providing them with a new perspective and way of thinking that improved their ability to problem solve and strategize. (McQuillan and Rissanen and Roberts 2013) 'The Cutting Circle' embodies the idea of 'dysgu', with the designers taking on the role of both teacher and learner, making it a

metadesign practice by bringing new focuses and responsibilities into design, beyond aesthetics.

Modular

Collection: 2021-9

1 Systems	10 Basics	100 Components	1000 Extra Components
1^{BE1} Belt System 1 1^{BUSDR} Bustier-Dress System1 1^{CO1} Coat System 1 1^{DR1} Dress System 1 1^{JA1} Jacket System 1 1^{JA2} Jacket System 2 1^{JA3} Jacket System 3 1^{SDP1} Shoulder Pad System 1 1^{SH1} Shirt System 1 1^{SPE1} Special Frame System 1 1^{TRSK1} Trouser/ Skirt System 1 1^{TUN1} Tunic Shirt System 1	10^{BR-BE-01-V1} Braided Belt 10^{BR-BUS-01-V1} Bustier Base 10^{BR-DR-01-V1} Dress Base 10^{BR-CO-04-V1} Coat With Stand Collar Base 10^{BR-CO-01-V1} Single Breast Coat Base 10^{BR-CO-02-V1} Double Breast Coat Base 10^{BR-CO-05-V1} Coat With Long Board Base 10^{BR-DR-02-V1} V Neck Standard Dress Base 10^{BR-DR-04-V1} V Neck Backless Long Dress Base 10^{BR-JA-01-V1} Jacket Single Breast Base 10^{BR-JA-02-V1} Jacket Double Breast Base 10^{BR-JA-03-V1} Chinese Suit Style With Board Jacket Base 10^{BR-JA-04-V1} Jacket V Neck With Stand Collar Base 10^{BR-JA-05-V1} Jacket Stand Collar Base 10^{BR-JA-06-V1} Jacket Stand Collar Base Short Version 10^{BR-JA-07-V1} Scapula Back Structure Jacket Base 10^{BR-JA-08-V1} Shoulder Blade Back Shape With Stand Collar Jacket Base 10^{BR-SDP-01-V1} Standard Shoulder Pad 10^{BR-SH-06-V1} Shoulder Blade Peak Lapel Collar Shirt Base 10^{BR-SPE-03-V1} Frame(Bottom) Base 10^{BR-SK-01-V1} Plain Long Skirt 10^{BR-SK-02-V1} Long Skirt Base With Board 10^{BR-SK-03-V1} Long Skirt 10^{BR-SK-04-V1} Long Skirt With Board 10^{BR-SK-05-V1} Short Skirt Base 10^{BR-SK-06-V1} Medium Long Skirt Base 10^{BR-TR-01-V1} Plain Trouser Base 10^{BR-TR-02-V1} Half Plain Trouser Base 10^{BR-TR-03-V1} One Third Trouser Base 10^{BR-TR-04-V1} Trouser Base 10^{BR-TR-05-V1} Trouser Plain Base With Opening 10^{BR-SH-01-V1} Peak Lapel Collar Shirt Base 10^{BR-SH-02-V1} Three Quarter Shirt Base 10^{BR-SH-03-V1} Polo Shirt Collar Base 10^{BR-SH-07-V1} Shirt Base With Zipper Stand Collar 10^{BR-TU-01-V1} Square Tunic Base	100^{BR-BUS-01-V1} Bustier Side 100^{BR-BUS-02-1-V1} Bustier Side Top Attachment 100^{BR-BUS-02-2-V1} Bustier Side Down Attachment 100^{BR-DR-01-V1} Dress Side 100^{BR-CO-01-V1} Coat Standard Side 100^{BR-DR-02-V1} Standard Dress Side 100^{BR-DR-03-V1} Long Dress Side 100^{BR-JA-01-V1} Jacket Standard Side 100^{BR-JA-02-V1} Jacket Short Side 100^{BR-JA-03-1-V1} Jacket Side Top Attachment 100^{BR-JA-03-2-V1} Jacket Side Down Attachment 100^{BR-JA-03-3-V1} Jacket Side Skirt Attachment 100^{BR-JA-04-V1} Scapula Back Structure Jacket Side 100^{BR-JA-05-V1} Shoulder Blade Back Shape Jacket Side 100^{BR-SH-02-V1} Shoulder Blade Shirt Side 100^{BR-SH-04-V1} Shoulder Blade Shirt Side Long 100^{BR-SPE-04-V1} Frame (Bottom) Side 100^{BR-SK-01-V1} Short Skirt Side 100^{BR-SK-06-V1} Medium Long Skirt Side 100^{BR-TR-01-V1} Buttons Trouser Side 100^{BR-TR-02-V1} One Third Trouser Plain Middle Side 100^{BR-TR-03-V1} One Third Trouser Side 100^{BR-TR-04-V1} One Third Trouser Middle Side With Board 100^{BR-TR-05-V1} Trouser Plain Side 100^{BR-SH-01-V1} Shirt Side 100^{BR-SH-03-V1} Scarf Part On The Collar 100^{BR-TU-01-V1} Tunic Side	1000^{BR-CO-SL1-V1} Standard Coat Sleeve With Circle 1000^{BR-DR-SL1-V1} Dress Standard Short Sleeve 1000^{BR-DR-SL2-V1} Dress Standard Long Sleeve 1000^{BR-JA-SL2-V1} Jacket Standard Sleeve With Circle 1000^{BR-JA-SL3-V1} Jacket Sleeve With Badges 1000^{BR-JA-SL4-V1} Jacket Short Sleeve With Circle 1000^{BR-JA-SL2-V1} Jacket Standard Sleeve With Circle 1000^{BR-JA-SL2-V1} Jacket Standard Sleeve With Circle 1000^{BR-JA-SL3-V1} Jacket Sleeve With Badges 1000^{BR-JA-SL4-V1} Jacket Short Sleeve With Circle 1000^{BR-JA-SL4-V1} Jacket Short Sleeve With Circle 1000^{BR-JA-SL3-V1} Jacket Sleeve With Badges 1000^{BR-SH-SL1-V1} Shirt Sleeve With Long Cuff And Circle 1000^{BR-SH-SL2-V1} Shirt Sleeve With Long Cuff 1000^{BR-SH-SL3-V1} Shirt Short Sleeve With Circle 1000^{BR-SH-SL2-V1} Shirt Sleeve With Standard Cuff 1000^{BR-SH-SL1-V1} Shirt Sleeve With Long Cuff And Circle 1000^{BR-SH-SL2-V1} Shirt Sleeve With Long Cuff 1000^{BR-SH-SL4-V1} Shirt Short Sleeve With Circle 1000^{BR-SH-SL7-V1} Shirt Sleeve With Standard Cuff

Figure 2, Algorithmic Modular System (JE CAI, 2022)

London fashion house JE CAI creates designs using their own ‘Algorithmic Modular System (AMS) of base layers, components, and extra components (JE CAI, 2022), providing the consumer with ability to construct their own garment that can be taken apart and reconstructed in various ways. The brand takes inspiration from a Chinese ideology by Tazoi, highlighting that “from one system it breeds infinite possibilities” (JE CAI, 2022)

JE CAI’s modular approach to design actively involves the consumer in the design process through allowing them to customise and essentially design their own garment from the individual components.

In JE CAI's description of their AMS, they state that the design will "allow *you* to personalise your own uniform" (2022). The use of the word 'you' specifically targets the consumer, highlighting that as designers, the consumer is a big part of the purpose of the design.

Making the consumer the focus at the design stage seems obvious as they are who you are designing for, however within the system the interconnection between these elements are recognised as making profits through being on trend and providing a quick turn over of goods, which is fuelling the 'throw away' culture that is worsening the industry's environmental damage. Modular design finds new interconnections between designer and consumer, such as customisation, replacement, and repair. This prolongs use through the idea of designing for emotional durability (Chapman, 2005), by bringing the consumer into the design stage but with an understanding of their metaphysical needs and desires (Chapman and Grant, 2007), making for more sustainable design.

The term 'uniform' is also used by JE CAI to describe the garments, whilst this could be used as selling point through its association with the idea of power and respect, it highlights the connections between modular and uniform design. Uniform design is focused around the idea of functionality (Bartlett, 2019), often like modular design trousers can be unzipped to create shorts, to adapt to the changing weather or working conditions. This highlights the importance and utilisation of pattern cutting and fastenings, to allow for the pieces to come apart and fit back together, a characteristic of both modular and uniform design.

Modular design is about changing the paradigms within the fashion system from the design stage, thus falling in line with the 'metadesign' framework, which aims to stimulate paradigm change through addressing systemic issues in design to move towards a regenerative future (Metadesigners, 2022). Trend forecasting site WGSN highlights a

growing popularity in ‘cargo’ and ‘utility’ styles (2022), and recognises ‘modular design’ as a big part in this. This further highlights the link between uniform and modular design, but also suggests that modular design could be the uniform of the future or ‘metaverse’, as uniform also having utopian references (Bartlett, 2019).



Figure 3, A Modular Anrealage Silhouette Through Blocks (The Cutting Class, 2020)

Figure 3 captures Kunihiro Morinaga’s ‘Block’, a modular collection of geometric ‘blocks’ that are interchangeable through a system of snap fastenings (Humble Magazine, 2020). Whereas JE CAI’s modular system consisted of base layers and components (JE CAI, 2022), each piece in Morinaga’s collection can be used differently, with a focus on it being ‘an exercise in child’s play’ (Anrealage, 2022). This idea of ‘child’s play’ suggests a collaboration with others; swapping and interchanging the ‘blocks’ with friends, bringing social interaction

into the design, which Jonathon Chapman indicates as an element of 'Emotionally Durable Design' (2005). Morinaga makes reference to it being a more sustainable approach to design, and despite being at a couture level, wanted to make this possible for basic, wardrobe pieces, allowing for it to be understood and accepted by consumers (Anrealage, 2022).

Beyond the ability to de-and-re-construct, the simple 'block' shapes allow for easy tessellation of pattern pieces at the pattern cutting stage, meaning there is less waste. This has reference to zero-waste design techniques (Rissanen, 2011) and also the life-cycle thinking (Gwilt, 2020) that is required by a designer to change the existing paradigms within the fashion system. Equally, strips of scrap fabric could also be used as fastenings or ties to hold the pattern pieces together, allowing for no-stitch designs and easy customisation.

Kunihiko Morinaga also highlights that the geometric design is inspired by traditional Japanese pattern making techniques, referring back to the idea of 'dysgu' or learning from other cultures as part of metadesign.



Figure 4, Using sustainable design strategies (Gwilt, 2020)

The three words explored in this writing, 'Systems' 'Dysgu' and 'Modular' each relate to the idea of 'life-cycle thinking'. This model developed by Alison Gwilt identifies the various stages in the life-cycle of a garment, and what design strategies can be applied at these stages, by designers, to achieve design sustainability. This resource is an indication that life-cycle thinking is required by a designer in order to understand the system, and recognise the power they have at each stage to implement more sustainable design. Therefore, a future area of study could explore; Does design education have a responsibility to focus on sustainable design strategies, in relation to life-cycle thinking, in order to achieve design sustainability?

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