

**How a maturation in interface design has brought user experience to a new paradigm,  
where function meets aesthetics in harmony, yielding a passive user.**

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## Summary

This research paper investigates how skeuomorphism presents a sense of familiarity in user interfaces, while simultaneously failing to embrace digital experiences. The eschewing of skeuomorphism has given way to an interface design which offers users a sophisticated versatility in which design complements functionality where it once incorporated ornamentation.

This paper will find how flat design in user interfaces – within the restraints of minimalism – can handle increased complexity while embracing the real limitations of the digital experience, thus eradicating the imposed limitations of skeuomorphism. This paper also seeks to expose how, by presenting a clear and engaging design rather than disguising and warping that interface to mimic something nostalgic, flat design imposes a ubiquitous augmentation which yields a greater user experience and passivity.

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## Chapter 1. Introduction

User interface design is now at an inflection point, beginning to penetrate fields beyond what previously had ever been anticipated. We are entering a phase where we struggle to distinguish what is important or real as we continue to equip ourselves, connecting the physical and digital worlds in a harmonious way, anticipating our environment and needs. Behaviour is easily facilitated, made immediate and provoked by these ubiquitous interfaces and the experiences derived from their aesthetics. This augmentation on the user's daily life is a direct result of a satisfying and aesthetically pleasing interface design. The user's behaviour and responses are directly influenced by their encounters with this new design and its persuasive nature, devoid of metaphorical representation.

The use of the term metaphorical representation refers to an obscure technical word: skeuomorphism, a form of mimetic design. Originally defined in the scope of archaeology as “an object or feature which imitates design of a similar artefact from another material”<sup>1</sup>, the usage migrated to computing and graphical user interface design. Often the centre of a much heated debate, skeuomorphism in the digital world defines itself as design which resembles a real world object.

Such a debate has focused primarily on matters of preference; those who support the use of minimal and fluent design approaches, and those who feel interface design warrants an aesthetic comprised of mimetic metaphor and embellished screen real estate. Absent is a discourse which examines the success of harmonizing aesthetics and functionality and how this affects user experience. It is as Geoffrey Hart writes in *Skeuomorphism: the risks and benefits of mimetic design*; “Deciding whether skeuomorphism is acceptable is not a simple binary issue of right or wrong; rather it's a nuanced consideration of whether a visual feature is right in a particular situation for a particular audience, whether it's sufficiently right that it requires no additional explanation, and whether a superior non-skeuomorphic alternative exists.”<sup>2</sup>

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<sup>1</sup> (Lindberg, 2010)

<sup>2</sup> (Hart, 2004)



Today a flat design has become the preeminent stylistic choice for user interfaces. The friendly minimal aesthetic was a welcome change to the previous design trends which were overtly hectic and contrived. The philosophical reasoning for flat design could be surmised as a mandatory simplification comprising a successful execution of affordances and idioms to create hierarchy, educating the user without the assistance of explicit design treatments like that of metaphorical representations. A balanced design emanates from this treatment which is capable of being intuitively navigated by users of a broadening demographic. The design has accelerated in the three years of its prominence, however, it reverts at times to the precursor so as to soften the unforgiving affordances amateur designers have rendered, with the omission of considering the user central to their process.

Arising from this approach to user-centric interface design is a desire to enhance the user experience with the use of microinteractions. By appealing to a user's natural desire for acknowledgement, microinteractions provide visual feedback and transitions allowing the flat aesthetic to appear weightless and provide the communication necessary to guide users through a design. Especially important for mobile users, microinteractions are proving integral to the future of user experience by providing more control, instruction, visual rewards and meeting expectations, appearing at a glance to be more human than machine<sup>3</sup>.

There in lies a question that plagues purists of either stance; Is this flat design merely a trend already on it's cyclical course towards extinction or have we arrived at a design capable of optimizing user interaction and experience, governed by a discreet visual language?

This paper will discuss the origins of skeuomorphic design and its inherent benefits in chapter one, before contrasting it with modern interface design in light of native users and the advanced cognitive capabilities of digital immigrants.

Chapter two further investigates the modern user interface introducing principles of excise, inappropriate representation and the inefficient taxing user experience which results. This chapter

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<sup>3</sup> (Cao, 2015)

concludes by focusing on the use of idiomatic interfaces and introducing the question of how to harmonise aesthetics and functionality.

Chapter three elaborates on the aforementioned orchestration of harmony and the importance of adopting minimal approaches to create concise and coherent interfaces. Using starkly contrasted examples of both design principles, a comparative study will significantly reassert the effective use of abandoning skeuomorphism.

Looking to the future and implications of this methodology of designing user interfaces, chapter four reinforces its predecessors by confirming the emergence of passivity in user experience due to the successful augmentation and advanced cognitive recognition. A lightweight investigation proposes the future of interfaces afforded by modern design. Anticipatory design is at the forefront of trends in 2016 and exclusively relies on clean minimal design to actively deploy its underlying function. Concluding the paper on this reiterates many of the points made through out the paper to add to the ongoing discourse of skeuomorphism's position in interface design and its impact on user experience.

## **1.1 History and Effective Metaphoric User Interface**

Emerging from a decade of stagnant progression in the world of interface design is an ensuing age of pursuit for an aesthetic that reflects the functionality of a product in a harmonious and seamless fashion. User experience is, more than ever, saturated an abundance of design treatments and interfaces. This begs the question: What is the culprit for this state of flux? This paper proposes that it is the diluted appropriation of real world artefacts representative of digital functionality, known today as skeuomorphism.

Born out of our initial lack of understanding of the digital age where visual cues became necessary with the advent of the first pointing device ('mouse'), the use of visual metaphor was introduced to lower cognitive effort and make accessible a device previously only used by specialists.

With the invention of Engelbart's mouse and on screen pointing devices coupled with advancements in GUIs, users had an opportunity to directly manipulate and interact with the two dimensional screen making feasible the necessary requirement for visual objects. The Xerox Palo Alto Research Centre (PARC) were responsible for the engineering that inspired the tradition that has led us to modern interfaces <sup>4</sup>. Despite retrospectively appearing crude, there is no shortage of accounts that document PARC's influence on user interface; it's innovation, homage to the history of engineering and art, ability to overcome economic constraints and most importantly a thorough investigation into the complex responses required to facilitate human interaction.

Few companies squandered the opportunity to implement and advance this technology inspired by the Xerox Alto and "D – Machines". Bit mapped displays progressed and graphic cards became less expensive introducing pseudo three dimensional sculptural effects, drop shadows and overlapping windows culminating in Apple's firm grasp on user interface design with the release of the Apple Macintosh in 1985.

With computers beginning to penetrate the domestic sphere and the surge in casual interaction becoming commonplace, metaphoric interfaces were a natural choice in implementing an intuitive experience. The early use of visual cues was recognizable and by extension informative. This concept effectively reduced the mental effort required to overcome the complexity of the interface, eliminating the need for guesswork.

The superfluous ornamentation of a design feature's inherent functionality was once necessary as the world shifted from an age of mechanical and industrial artefacts into the digital age. The initial purpose of skeuomorphism derived from its real world ancestry as a practice in representation and an effort to ease this transition, after all it has not been uncommon for humans to reference what they are accustomed to as way of compensating for their unfamiliarity with a new technology. In the late 1980's skeuomorphism flourished as a means of providing a visual language which users could decipher and navigate with the knowledge they had acquired from investigating real world objects, a relationship known as '*affordance*' coined by cognitive psychologist Gibson <sup>5</sup>. This

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<sup>4</sup> (Levy, 2014)

<sup>5</sup> (Shaw and Bransford, 1977)

required little interrogation as self explanatory metaphors offered indicating signals and coupled with the tactile feedback, bevel and drop shadow was sufficient, effective and appealing for digital immigrants.

Relying heavily on a natural propensity for deciphering these global metaphors saw users grasp meaning and associate mental connections to real experiences proving skeuomorphism a worthy design feature of user interfaces. The ornamental reflection of analogue objects became ubiquitous with interfaces despite referencing obsolete counterparts in some cases, for example the typewriter or a 3.5” floppy disk. There is no denying the effective role skeuomorphism has had in convergence of the old and new, often slavishly imitating materials to aid the traditionalist. It wasn't long before these representations became inflated and condescendingly gratuitous.

In an age of digital natives however, the use of skeuomorphism is no longer acceptable. Gone is the postmodern innovation that brought these compositions to the forefront of design, remaining in its place is the symptoms of excise and bloated design sector attempting to depict a fictitious reality. Traditional metaphoric design no longer appeals to modern users, causing confusion to a generation with an innate ability to decode interfaces.

Drawing broad analogies between experiences and real world objects is assumptive of a users understanding, negligent of cultural backgrounds and can equally obscure the functionality of an interface in an attempt to reveal it.

## **1.2 Benefits in Gaming and Child Education**

That is not to say skeuomorphism does not have its unique monopoly on interfaces of a particular technology. Game design employs skeuomorphic design almost exclusively, drawing on various metaphors and real world imitations to create an all-encompassing immersive experience. The design of fictional worlds and experiences rely heavily on this design without which they would fail to successfully create any illusion of realism or fantasy. Such genres of user interface design

require appealing to emotional and visceral sensations for gratification and will for the foreseeable future benefit from this design.

Game design uses global metaphor, which exemplifies the greater extent of skeuomorphism's affordances. Its concern with accurately representing real world objects is utterly crucial to the functionality of game play and an immersive experience. Game design is rarely perturbed by screen real estate in cases that may benefit the player and so metaphor significantly assists navigation and narrative. After all, as Nicholas Mirzoeff described in *What is Visual Culture* there is a rife gravitation "to picture or visualise experience"<sup>6</sup>.

That said, *Stack* by Ketchapp and *Monument Valley* employs a clean aesthetic and have enjoyed substantial success. Flat, polygon graphics and simple shapes are contrasted against empty, colourful spaces and allow for a gaming experience which has been said "stuns with its serenity ... each screen is a work of art"<sup>7</sup>. The removal of extraneous detail in these games focuses the player on the intuitive mechanics and, like microinteractions, affords the games to be played at a glance in a less immersive sense.

The use of skeuomorphism and metaphor re – mediates the visual narrative of games, fostering an immersive gaming experience with a distinct coherence and construct. The use of global metaphor further establishes a vicarious kinaesthesia creating a residency and perception of being situated in a fictional world.

Skeuomorphism in gaming is here to stay. It is constitutive to the very architecture of the genre of gaming, a vital tool for creating immersion and prescribing the explicit narrative path and goals. Consequently; "The space for reading or meaning – making in the traditional sense is radically reduced in computer games"<sup>8</sup>.

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<sup>6</sup> (Mirzoeff, 1999, p. 6)

<sup>7</sup> (Ustwo, 2014)

<sup>8</sup> (Darley, 2000, p. 164)

Furthermore, its learnability benefits for children, similar to that of the structure of game design, will invigorate and enhance a child's interest as affordances and mimetic attributes offer a sense of familiarity and understanding of an interface. Educational interfaces and applications targeted at children employ skeuomorphism for reasons not dissimilar to the initial motivation of the design.

The aesthetics of global metaphors engage children on a much more visceral level and like the digital immigrant, they draw inference from their real experiences. Images of common physical objects leverages with a child's knowledge and appears to afford the same characteristics of it's physical metaphor. Young users require a great deal of support from an interface, ranging from emotional engagement, to cognition of linguistics and memory.

Recent studies show that one in three children ages three to five use the internet daily and fifty - four percent of six to eleven year olds having home access <sup>9</sup>. Purposes vary but the use of search engines exceeds gaming and Youtube in favour of aiding extra curricular activities. Special search engines like Kidrex.com are available and compensate for the emotional immaturity and cognitive abilities of children with an emphatic use of metaphor and skeuomorphism. Children of a primary school age are considered to be in their concrete operational stage of cognitive development, which when surmised means they learn by use of logic and struggle to think abstractly <sup>10</sup>. It is vital that familiar real world metaphors are used in this case and that younger users avoid frustration and earn the rewards gleaned through success for their emotional development.

Not yet hardwired to interact with complex content – centric interfaces, children tend towards obeying the prescribed navigation and goal driven interfaces which make use of skeuomorphism.

Since a child's cognitive abilities are not fully formed and the innate difference in emotional maturity of children and adults is quite so vast, particular attention must be paid to ensuring the interface conjures a sense of competency and develops self – confidence. Building on the above concept, an attractive visual interface with stimuli capable of arousing positive reception for young

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<sup>9</sup> (Child Trends DataBank, 2015)

<sup>10</sup> (Piaget et al., 1969)

users is important for their psychosocial development. Don Norman's seminal text *Emotional Design*<sup>11</sup> separates cognitive processing into visceral, behavioural and reflective.

Skeuomorphism offers users of this demographic an unparalleled experience. Visceral cognitive processing is the first to respond, reacting to stimuli and sensory aspects revolving explicitly around aesthetics. A child's ability to recall or associate on screen events with real world objects and thus understand the performance, functionality and usability (behavioural) further emphasises the niche but highly important position of metaphoric design.

To conclude, the exaggerated tactile feedback often associated with skeuomorphism and garish aesthetic does have its place in user interfaces and is not entirely a thing of the past. Adults and young users today have matured beyond the desire to interpret metaphorical representation and are capable of deciphering iconography, continuing to scan pages for imagery and icons before reading text. This is further investigated in chapter three with reference to Penguin's renewed branding and website and the effort to appeal to a broad demographic of site traffic.

### **1.3 Expiry and Dawn of Mature User**

The purpose of this paper will concentrate on the benefits of skeuomorphism's demise in terms of user interfaces and experience with exception to game design and child friendly optimization.

The unveiling of Apple's iOS7 in 2013 marked the bold new direction that interface design would adopt. Parting ways with its synonymous traditional interface design that defined many of their products, Apple along with Sir Johnny Ives at the helm embraced what their competitors had established, employing a distinctively flat design. Apple, like Microsoft and Google realised that users no longer required subtle visual cues. The digital natives and immigrants alike now responded to interfaces intuitively capable of deciphering foundational elements, colour and text. With condensed visual noise in favour of appealing visual form and iconography a design aesthetic

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<sup>11</sup> (Norman, 2003)

bridging form and functionality offered a new user experience which, by definition excluded skeuomorphic features.

Objectively reading Apple's OS X Human Interaction guidelines, one can find a conscious effort to merge functionality with simple effective design, marketing an interface which integrates "seamlessly into this environment, while at the same time providing custom functionality and a unique user experience"<sup>12</sup>. In the same guidelines, Apple hesitantly advise that if realism must be adopted that it enhance usability, respond to various resolutions and avoid extraneous decoration.

The over – wrought visual metaphors have been jettisoned in favour of user interfaces concerned with minimal controls and cognitive footprint. Interfaces are no longer inhibited by a regimented adherence to the workings of real world artefacts. Basic shapes such as circles, squares and rectangles form the basis of modern interfaces often applying greater importance on typography and bold use of colour over bevels or drop shadow. Distinctive relevance can be delineated between elements of priority or function with hierarchy implied by use contrasting shape and colour. Users quickly learn the associative relationships between functions and forms in the uncluttered real estate of screens. Calls to action, greater engagement and a less overwhelming experience has been established in the absence of skeuomorphic design.

Flippantly coined the most hated design trend, skeuomorphism is far from a tragic design<sup>13</sup>. It is the language that allowed for interaction with machines. As we advance to frontiers with the knowledge it has bestowed us we can explore new navigations with ease, minimalism and intuition. With these affordances in mind, design can meet functionality seamlessly enhancing user experience.

Users have evolved and become increasingly familiar with the iconography and navigation presented to them in interfaces and so need less support from physical metaphors responding autonomously to carefully constructed idioms and affordances. Falling under many trends such as Metro, Flat or Material, one thing seems certain; the benefits of adopting this minimal approach

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<sup>12</sup> (Apple Inc., 2015)

<sup>13</sup> (Brownlee, 2014)



devoid of skeuomorphism proves necessary for a pleasurable and succinct user experience across devices.

## Chapter 2. Discussion

It was once considered adequate to saturate the totality of screen real estate with visual representations of familiar objects for the purposes of easing transition and simplifying interaction. As discussed in chapter one, with the advent of Windows 8 and iOS7, interface design has made a significant transposition in favour of a simple, minimal and flat aesthetic. No longer confined to the physics of the three dimensional model of real world objects, modern user interfaces are content – centric and optimized to minimize user input and retrieve the greatest user experience subject to the device.

The use of smart mobile devices has been hugely influential on the design of interfaces. Initially dominated by Apple’s iPhone released in 2007 (which, until 2013 boasted a cumbersome interface) mobile devices have become the focal point of interface design and the current endeavour to present a user interface which optimizes user experience, employing a degree of transparency and unified cross platform identity. As this paper will outline, there have been many radical shifts in the design of interfaces, however, at the core of the success for these mobile devices is the implementation of iconic idioms and affordances that could be quickly and easily learned and have migrated throughout platforms.

Today, the market is flooded with tablets, smart phones and smart watch devices which slowly undermine the sale and use of desktop and laptop computing. Users gravitate towards these devices due to their minimal excise, direct manipulation and hidden complexity. As a result, these devices have dictated the direction of interface design as a refined facet of user experience and aesthetic emerged between competing devices each commonly comprised of touch screen, similar idiomatic controls and sensor driven hardware.

Analogue materials offer a natural tactility and ease of understanding. On the contrary, skeuomorphic digital representations, with their faithful detail lead to complexity and inconvenience. The initial association has been established by now and conversely the use of metaphors are excessive. What was once pursued for the sake of user friendliness has climaxed in

a state of excise. Perhaps the metaphors were exceeded or their efficiency was no longer acceptable despite the validity of the underlying function and representation. Established so far is that these representations ultimately result in excise that restricts and delays interactions resulting in a less than efficient design.

## 2.1 Excise and Skeuomorphism

Excise refers to interactions which require an unnecessary effort from users. A reduction in the amount of interaction involved in performing a task from conception to completion is important for creating an effective user experience. In chapter twelve of *About Face* while discussing well behaved products, the author describes excise as tasks which “don’t contribute directly to reaching the goal, but instead represent extra work that satisfies either the needs of our tools or those of outside agents as we try to achieve our objectives”<sup>14</sup>.

Stylized graphics and careful attention to detail can create atmosphere in an interface and in some cases encourage brand awareness, however, this should not interfere with usability. Excessive use of ornamentation causes users to spend greater effort deciphering controls and navigation.

Take for example the Russian website Sovietsky Boutique (<http://www.sovbut.ru/>), as an extreme display of visual excise. Navigation is almost impossible to distinguish and text is hidden in the elements of the interface; a highly decorative vintage television set which hosts an array of controls disguised as mechanical operative parts of the television. Little function can be derived from the navigation as they range from buttons, switches, dials and sliders and clickable elements all hidden in an accurate representation. A lack of affordance makes it difficult to find controls and there is little feedback to reassure the user of their expectations. There is an absence of consideration given in aiding users to differentiate navigation from décor. Further excise is introduced in the form of wallpaper in the periphery of the screen real estate and common household objects litter the surface of the television. The aesthetic is quintessentially skeuomorphic and is highly representative of an

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<sup>14</sup> (Cooper, Reimann, and Cronin, 2014, p. 272)

interface riddled in excise. It goes without saying that Sovietsky Boutique and interfaces alike demand a greater amount of work in understanding the interface due to the visual interpretation required.

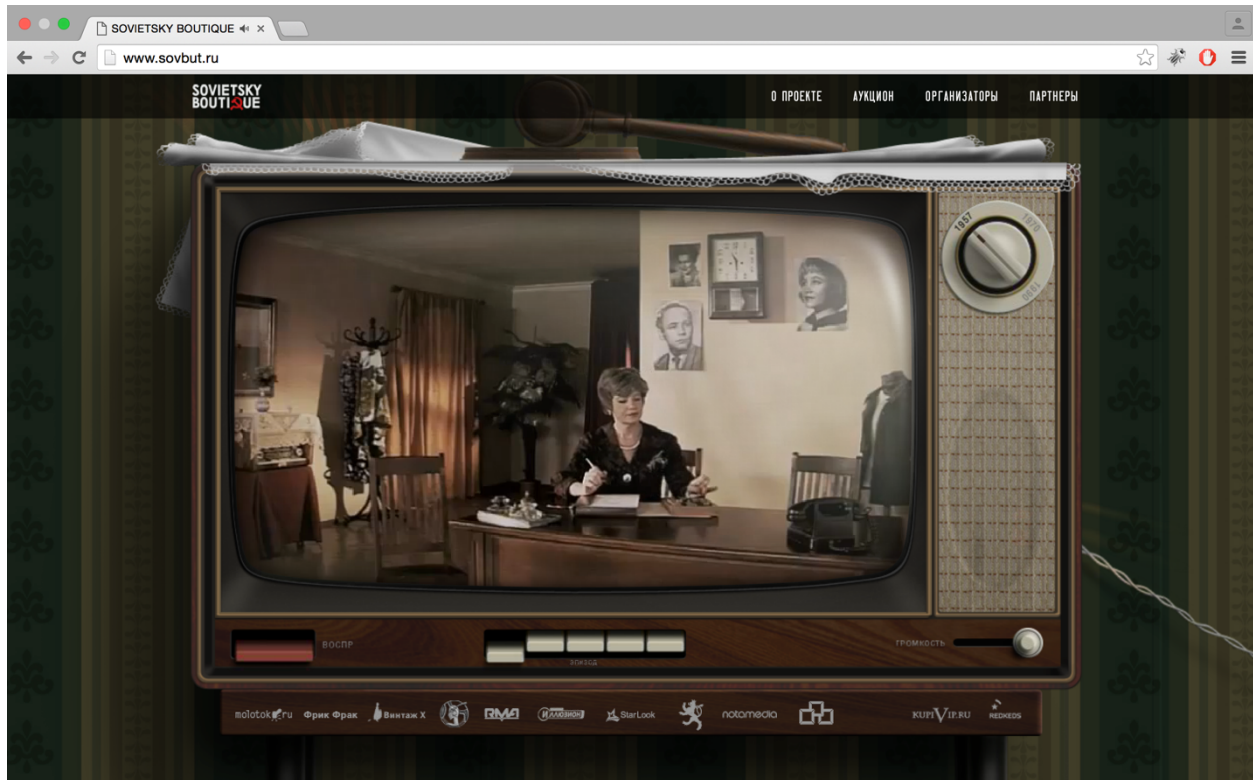


Figure 2.1 – Sovietsky Boutique

Therefore, for the sake of user experience, interaction designers must endeavor to remove all excise from tasks, regardless of how menial the process, as this is a key factor in user dissatisfaction.

Sovietsky Boutique may be an extreme case of skeuomorphism yet designers frequently employ tactics not dissimilar, albeit with less severity and conviction. Intent on inducing a sense of familiarity, the adoption of real world objects and tactile response flooded interfaces in the early part of the last decade. Aside from the displeasing look and feel of these interfaces it is important to reinforce the excise that retrospect has granted.

Navigation, for instance, is quite often a source of excise where skeuomorphism is involved proving crucial in user experience dissatisfaction. Returning once again to Apple for comparison,

the stark difference between iOS7 and its precursory operative systems highlights a transition away from user friendliness and the excise introduced by skeuomorphism to a simple intuitive interface. From Figure 2.2 it is clear that users have less visual work to perform to successfully decode information. The changes allow the interface to breathe and comfortably engage the user making clear the paths and goals available in line with specific needs. Constraint in this context helps the user determine their course of action. The use of obvious and instantly apparent actions is important in reducing the effort required to accomplish a task. Determining functionality is no longer obscured by ornamentation and user experience is enhanced.



Figure 2.2 – iOS7 vs iOS6

So how do we learn to operate that which we have never seen before? Without metaphors to inform our decisions?

As mentioned in earlier chapters, the concept of affordances was introduced by psychologist James Gibson and later expanded by Donald Norman in *The Design of Everyday Things*<sup>15</sup> to define affordances as an aspect of design which informs the use of an object; “the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used.” The correct use of affordances therefore suggests cues to users just by looking and with little effort and intuition the intended purpose is passed from designer to user. This requires a careful combination of cultural, semantic and logical constraints to provide clues, reducing the variety of possible interactions and informing users of a course of action.

## **2.2 The Adoption of Flat Design**

Interfaces from Windows 7, iOS6 or OS X utilized Norman’s affordances with the use of skeuomorphism and its drop shadows and highlights which enhanced its three dimensional qualities, affording users to interact using manipulation skills adopted from the real world where shapes and sizes, concaves and accessible objects urged our interaction. In modern interfaces where visual metaphors are no longer the trend and the three dimensional cues which offer less affordance we rely on previous experience. Where the answer is less obvious we learn by experience.

A responsibility ensues for interface designers when implementing flat aesthetics where text or drop shadows are absent in their two dimensional plane. They must fulfill affordance expectations or put simply: a visual response must accompany any interaction. The lack of clearly identifiable clickable elements is a source of the Nielsen Norman Group’s argument against flat design saying, “Clickable UI elements with absent or weak visual signifiers condition users over time to click and hover uncertainly across pages”. On reflection this article merely advises against the misuse of minimal design, where designers have acted careless in appropriating signifiers and affordances ironically forcing users to “lose that sense of empowerment that is so critical to a positive experience. They have to slow down to determine where they can go next, which is an unnecessary

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<sup>15</sup> (Norman, 2013)

addition to their cognitive load.”<sup>16</sup> The Neilson Norman Group have discouraged this in web design as far back as the presence of Flash, likening the degradation of user experience to a “usability disease”<sup>17</sup>. Like the ‘mystery meat navigation’, weak signifiers result in non-standard GUIs and granularity of user control. In accordance with Jakob Nielsen’s advice against Flash, a flat aesthetic must avoid failure to present clear clickable navigation.

Pliancy and hinting are critical in offering how elements communicate their interaction. Pliancy is a term used to describe areas or objects which can be manipulated or interacted with by users. “Visually communicate pliancy whenever possible” is a highlighted design principle in *About Face*<sup>18</sup>. The author continues by delineating four ways in which affordance may be hinted: Static, Dynamic, Response and Cursor. Designers have utilized these concepts advancing flat design from concept fad to mature design trend.

Google’s material design or flat 2.0 see’s designers overcome usability issues that allowed critics to support the visual metaphor and its use of strong affordances and signifiers. The use of physics and subtle drop shadow on buttons gives users a sense of hierarchy and affordance. Furthermore, the use of card structure pays homage to metaphors suggesting a three dimensional structure on a two dimensional plane.

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<sup>16</sup> (Meyer, 2015)

<sup>17</sup> (Nielsen, 1998)

<sup>18</sup> (Cooper, Reimann, and Cronin, 2014, p. 319)

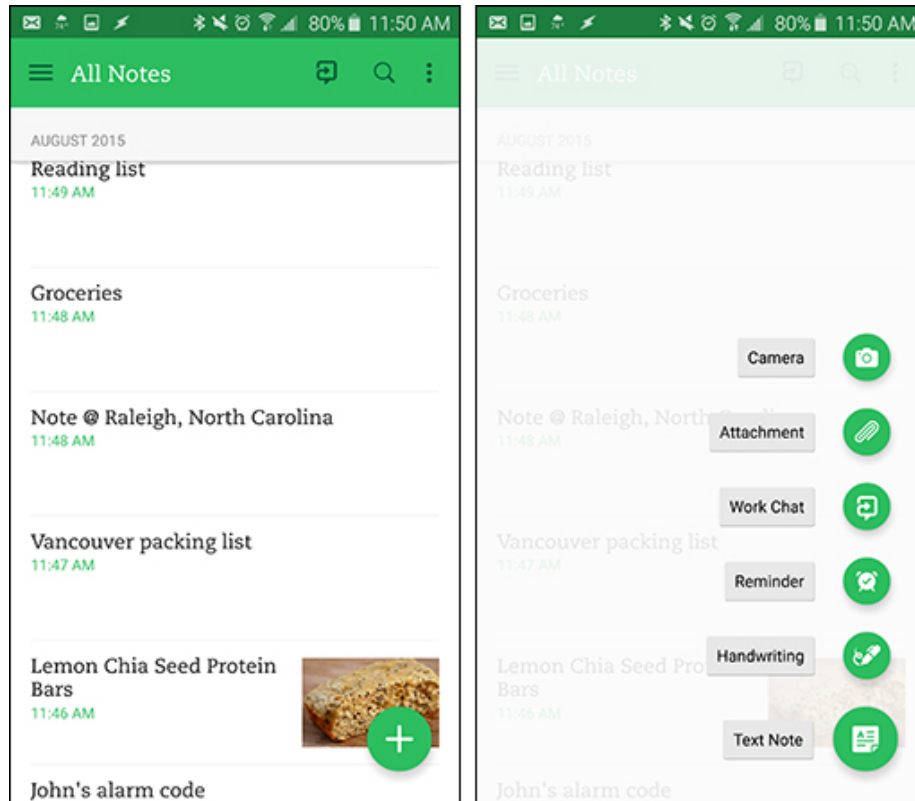


Figure 2.3 – Flat User Interface

Nielson Norman Group can offer a succinct conclusion in support of the argument of affordance in both skeuomorphism and flat design in favour of this paper's title;

“Early pseudo3D GUIs and Steve-Jobs-esque skeuomorphism often produced heavy, clunky interfaces. Scaling back from those excesses is good for usability. But removing visual distinctions to produce fully flat designs with no signifiers can be an equally bad extreme. Flat 2.0 provides an opportunity for compromise—visual simplicity without sacrificing signifiers”<sup>19</sup>

The goal of any interface is to engage users and support human intelligence and effectiveness. For this to be achieved, interfaces must advance to a state of transparency. Today's interactions are beginning to blur the line between product and humans, where the mechanical process is subsided or alleviated leaving a residual trace and offering users a state of progress, unaware of the intervening software. This advancement focuses on a state of orchestration where aesthetics meet

<sup>19</sup> (Meyer, 2015)



functionality in harmony, coherently working towards single objectives whilst its communication appears invisible. As Bruno Munari in *Design as Art* briefly outlines, design should: “[take a] form as appropriate as possible to its function, a form that one might say arises spontaneously from the function”<sup>20</sup>.

In modern life our activities are conditioned by our interactions with interfaces, signs and symbols and their inherent forms of communication. Road signs, for instance, rigorously control our movements as they transmit messages precisely adapted from their theme employing an aesthetic harmony that characterizes directness and immediacy. Similarly, in interfaces we are conditioned to obey the flow that is orchestrated by the interplay of function and design. This can be reduced to an exercise of ‘less is more’ in which interface designers attempt to simplify the elements but not at the expense of ability and all the while aware of keeping complexity at bay. The resulting elegance is a product of post - modern minimalism.

This adherence to signs and symbols can be traced back to cognitive and affective components from which we assign meaning and value respectively. The affective state is hardwired and depending on a users positive or negative affect will inform how they think. In Donald Norman’s *Emotional Design*, he makes the argument that design must balance both positive and negative affects to offer both focus and effective learning. Regarding positive affects the brain is much more susceptible and: “[The user is] far less focused, and far more likely to be receptive to interruptions and to attending to any novel idea or event. Positive affect arouses curiosity, engages creativity, and makes the brain into an effective learning organism”<sup>21</sup>. Negative affects can be attributed with the opposite values, inducing concentration and a focus on avoiding distraction.

In chapter one, Norman’s simplified levels of interaction were introduced (visceral, behavioral, reflective) and visceral appeal highlighted the benefits of skeuomorphism in interfaces designed for young users. Visceral refers to the designs appearance alone and excuses the pleasure and effective properties surmised by behavioral design. Behavioral design in conjunction with visceral reinforces much of the argument that interfaces should strive for content centric design devoid of

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<sup>20</sup> (Munari and Creagh, 2008, p. 72)

<sup>21</sup> (Norman, 2003, p. 26)

visual metaphors, embracing flatter graphics. Norman concludes his example encouraging designers that:

“the emphasis should be on content, not on the skill of using the device, so ease of use should be stressed. Where content matters, the user should not have to spend time mastering the device, but rather should be able to devote time and effort toward mastering the content, enjoying the presentations, and exploring the domain”<sup>22</sup>.

The use of flat graphics, clean typography, vibrant colour and elegant structure in user interface caters for both positive and negative affects to a greater extent than metaphorical design. The use of skeuomorphs is limited to interpretation and subject to the user. They may be perceived with loaded values and therefore present designers with a problem of maintaining a flow suitable for users of different cultural backgrounds. The use of flat design which employs idioms and simple graphics leaves users susceptible to both positive and negative affects where necessary, since the aesthetics are designed to reflect functionality in a subtle if not transparent fashion, adhering primarily to behavioral design characteristics.

Digital Natives, a term coined by Prensky<sup>23</sup> refers to a generation of users who have grown up surrounded by computers and various digital devices, autonomously able to interact with a range of interfaces without any prior instruction or tutorial. Nearly three decades on, digital immigrants have developed a sophisticated understanding of interacting with products, reflecting on the migration from analogue as though it were a distant memory. Both generations are equipped to understand the emerging non – representational, immaterial and flat design language that has overthrown the embellishment, bevels, drop shadows and faux leather and wood.

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<sup>22</sup> (Norman, 2003, p. 45)

<sup>23</sup> (Prensky, 2001)

### 2.3 User Response to Flat vs. Skeuomorphism

Users are now accumulating knowledge from their previous interactions with devices, rather than directly drawing influence from real world experiences and physical artefacts. This development in how users learn to interact congruently and simultaneously responds to the impatience and dissatisfaction users can procure. The experience of dealing with an interface riddled in metaphor becomes taxing after the interface has been mastered.

After the initial release of Apple's iOS7 in 2013, David Oswald conducted a subjective survey releasing the results in his paper *'Flat Design vs. Skeuomorphism – Effects on Learnability and Image Attribution in Digital Product Interfaces'*<sup>24</sup>. The survey took place in two sessions with a period of eight months between tests in order to document first impressions to the exposure to the new iOS and the change over time. The survey was gauged by a set of positive and negative extremities polled on a five-point scale.

Two groups, thirty-four and sixty-nine students from the same program and semester took part in the two surveys, respectively. The median age of the participants was twenty-seven, ranging between nineteen and forty-two. Oswald admits that some results proved ineffective since connotations were misconstrued in the semantic differential. These results were omitted from the conclusive results. The results the author decided to present showed some significant changes in the eight months between surveys. The subjective survey revealed an initial favoritism towards the skeuomorphic representation of an interface, however, this shifted substantially by the second survey. Oswald writes that the novelty of the release had worn off and saw users respond favourably to the flat aesthetic of iOS7. The most notable results of this subjective survey was the attributed values of 'childlike' and 'serious' which alternated between the two surveys concluding that iOS7 was "serious" and "grown up".

In conclusion, Oswald found that iOS7 had been accepted as a professional interface and that affordances were no longer necessary as a result of mature digital users. He writes "affordances based on physical micro-metaphors are not needed anymore, because a majority of the users have

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<sup>24</sup> (Oswald, 2014)

been using iOS6 for several years and do not need metaphoric-physical hints anymore”<sup>25</sup>. It is Oswald’s opinion that the flat design warrants further exploitation due to the innate ability to decode navigation despite the argued lack of affordances.

Most second generation digital natives are intrinsically aware of how to unlock a handheld device by swiping. It isn’t unusual to witness children attempt to close books or pages in the real world with the ‘five finger pinch’ associated with the iPad. After all this second wave are introduced to the digital almost as soon as the physical as devices become more ubiquitous. This is leading to metaphorical translations into the digital world becoming obsolete due to the frustrating impact on user experience. The swipe to unlock feature of the iPhone is just one example of where generations of operating systems have differed due to a new direction in favor of less metaphorical affordances allowing instead delicate affordances assisted by subtle animation.

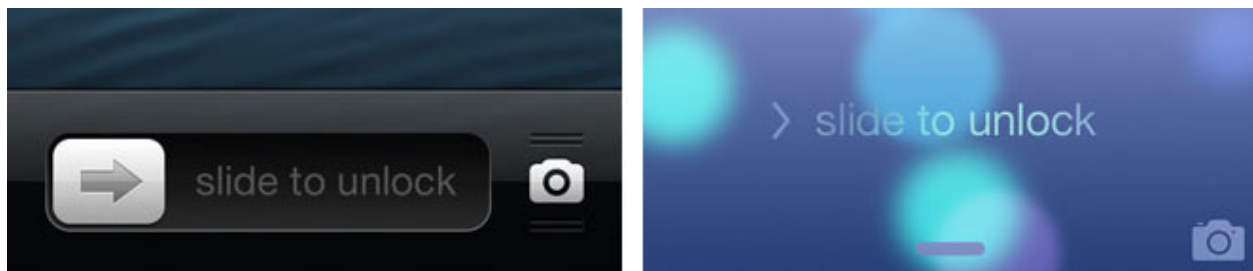


Figure 2.4 iOS7 vs iOS6 Slide to Unlock

This is undeniably a well trained reflex for users and may be an extreme example, but it displays the lack of necessity for affordance and the user’s capabilities to decipher the abstract typographic. A momentum in this direction of abstract iconography employing idioms rather than metaphor is crucial in user satisfaction and experience. Brendan Dawes, author of *Analog In, Digital Out*, presents an argument claiming that humans are so flawed by emotion and taste that poor design is accommodated over simple efficiency. Elaborating on this, he concludes that “it’s the experience of an object, the little special details, which make us want to interact with it in some way, physically or emotionally”<sup>26</sup>.

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<sup>25</sup> (Oswald, 2014, p. 6)

<sup>26</sup> (Dawes, 2006, p. 40)

This chapter has made clear the limitations of skeuomorphism and the need to remove excise from interfaces in order to progress in pursuit of a greater user experience. Much of the discussion on the benefits of skeuomorphism and visual metaphors revolves around a philosophy of maintaining a sense of familiarity for the user, to design pragmatically as Jean-Baptiste Lamarck suggests, where “The form follows the function”<sup>27</sup>. This intuition engages the power of the human mind to form connections between disparate objects and understanding their function through similarities in the real world. The trash can icon located on a desktop is an obvious example of how metaphorical intuition is applied in interfaces. Enough has been mentioned to discredit this design practice for the advancement of user experience, however, in order to inform this argument and elaborate on this harmonious orchestration, an understanding of idioms must be introduced.

Idioms are defined as “a form of expression natural to a language, person or group of people”<sup>28</sup>. Unlike skeuomorphism, idiomatic design abstains from the use of metaphorical connections or associative provocations. Instead, the purpose of idiomatic interfaces is to learn simple visuals and their respective behavior to overcome a task. We have an ability to learn idioms without the need to dissect the various permutations that might be sought through reason. Without intention we can memorize idioms with minimal effort and without the use of connections fundamentally because it is distinctive.

Idioms are the foundation of interface design, which supersedes skeuomorphism. They are they the increasingly popular flat, graphically simple layout and controls which imbue modern interfaces. Composed effectively, they require little interrogation and their function is learned with ease. This brings to mind Munari yet again in which he describes the interpretation of images; “One can present an image with the merest suggestion of another image in it, barely hinted at, so that it is not revealed at once but leaves a trace of doubt in the mind... to grow as from a seed in the mind.”

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<sup>27</sup> (Munari and Creagh, 2008, p. 33)

<sup>28</sup> (Lindberg, 2010)

<sup>29</sup> (Munari and Creagh, 2008, p. 72)

### Chapter 3: Idiomatic interface: A Harmonious Orchestration

Chapter one and two focused on the limited beneficial uses of skeuomorphism and the need to adopt a flatter design aesthetic. The negative connotations of skeuomorphism outlined in this paper have been many, albeit unbiased and constructive, and so this chapter concentrates on supporting the argument by expanding on previous points such as affordance and idioms before concluding the chapter with examples of the harmonious equilibrium between design and function of what will hereby be referred to as flat 2.0.

The title of chapter three romantically likens the design of flat 2.0 to a harmonious orchestration. To be less overt, this refers to a successful balancing of aesthetic and function where form follows function. This term has cropped up in previous chapters and requires some further investigation. The form follows function corollary can be subdivided into two categories; the description of beauty and the prescription of beauty.

Description of beauty results from purity of function where there is an absence of decoration while prescription of beauty refers to design that considers aesthetics secondary to functional aspects. Bruno Munari sheds some light on this in *Design as Art*. He points out that in the early days of rationalism “an object was beautiful in so far as it was functional”<sup>30</sup>. Instead, today we have progressed to a state of formal coherence as seen in nature. Using the form of a leaf as an example, Munari attributes its form to its need to fulfil a certain function for a specific tree concluding that “a leaf is beautiful not because it is stylish but because it is natural, created in its exact form by its exact function”. It is his opinion that a designer’s job is to help an object “make itself by its own proper means”.

The two interpretations represent polar opposites of a spectrum and therefore cannot be applied as a design rule or an aesthetic guideline. The authors of *Universal Principles of Design* propose that

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<sup>30</sup> (Munari and Creagh, 2008, pp. 30-31)

where this principle be applied the question should not be: “What aspects of form should be omitted or traded for function?” but instead: “What aspects of design are critical to success?”<sup>31</sup>.

Success criteria in interface design should not be a blind allegiance to aesthetics or function but should inform decisions and specifications. We have seen in past examples where aesthetics have compromised functionality (skeuomorphism) and where functionality has compromised aesthetics (Misuse of flat graphics). In the case of interfaces, defining success criteria is critical and should be situated firmly in the middle of the spectrum.

The success criteria of flat 2.0 attempts to find consonance to enhance user experience. A careful consideration has been given to the tendency that users will resist the unfamiliar and to learn from generations of design that have led to the erosion of biases. Designers can focus on creating aesthetically pleasing interfaces while conditioning users to subtle affordances and signifiers. Apple’s iPod Shuffle is an example of successfully defining the success criteria. The interface, which has no screen, is a careful construction of elegance and economy that utilizes five idiomatic controls which meet the user’s needs and expectations. The simplicity of the idioms, allow the controls to be learned easily and hybrids function and aesthetic perfectly. Obeying the ‘less is more’ principle maintains users in a flow of satisfaction. Flat 2.0 allows content to take its truest form with the eschewing of extraneous details revealing an interface of clarity and authenticity.



Figure 3.1 – iPod Shuffle

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<sup>31</sup> (Lidwell, Holden, Butler, and Elam, 2010, p. 106)

“Idiomatic expressions don’t provoke associative connections like metaphors do”<sup>32</sup> is how authors of *About Face* introduce the topic of idiomatic interfaces as an alternative to skeuomorphic metaphors. Based abstractly on our ability to learn figures of speech, the principle is applied to the design of interfaces. This subsequently resituates the focus of the designer to implementing simple behavioral and visceral idioms that can be learned instantly avoiding the metaphorical, intuition of function or explicitly technical design.

We learn these idioms because they are distinctive, consistent and simple. They do not warrant ornamentation and do not demand any subliminal aid in deriving their meaning. Rather, users learn them rapidly without realizing. The human mind has a powerful ability to recall signs and remember minute details and so without the ability to intuit an idiom, users can learn these obscure signals without trying to reason with their various permutations.

### **3.1 Idiomatic Interfaces and Affordances**

Modern interfaces have strictly moved in favor of flat and graphically simple designs to enhance the learnability of controls and layouts through the use of idioms. To quote *About Face* once again; “All idioms must be learned; good idioms need to be learned only once”<sup>33</sup>. Just like how we interact with other humans, brands and behavioral attitudes, we learn them without understanding. Users may not understand why a particular idiom is composed the way it is but they do understand its function. They have seen it before and learned it automatically and with ease.

In light of this approach, an irony has emerged in so far as several iconic features of interface design previously thought of as metaphoric are early examples of idiomatic design. Resizable windows, radio buttons, drop down menus and close boxes are all examples of idioms which have been learned by users rather than metaphorically intuited. There is no metaphorical or real world collapsible folder or infinite filing system. Their strength and usability is derivative of their idiomatic design and lends highly to user satisfaction.

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<sup>32</sup> (Cooper, Reimann, and Cronin, 2014, p. 308)

<sup>33</sup> (Cooper, Reimann, and Cronin, 2014, p. 309)



Complex interactions can be built using the integration of simple idioms in the same way the mouse with its three buttons eliminated the complexity of keyboard input. This design principle is built on a structure of combining complexity and creating visual displays that limit the vocabulary necessary to complete tasks and goals. This is similar to the aforementioned example of road signs in chapter two. The variation of shapes and colors are informative of different precautions. Meanings are imbued from use and not for connections to other objects. Their power to enhance usability and user experience is a result of the ability to create autonomous interaction from users.

Flat 2.0 further simplifies the degree of interaction required. Vibrant colors, simple shapes and clean typography not dissimilar to road signs, create hierarchy and calls to action. Users learn these shapes and signals and a subsequent autonomy forms.

Affordances have been discussed in relation to skeuomorphism and the Neilson Norman Group's criticism of flat design outlined its weak use of affordances or negligence of designers to provide signifiers. Flat 2.0 redeemed this by introducing a lightweight use of drop shadow and signifying that controls are indeed able to be interacted with; "Flat 2.0 provides an opportunity for compromise—visual simplicity without sacrificing signifiers"<sup>34</sup>. Google's 'Material Design' is founded on the challenge of merely suggesting a tactile reality which is open to the possibilities of technology. They have adopted the word 'material' as a metaphor to rationalize motion and space. Although fundamentally flat, Google have created a language which uses familiar tactility to inform affordances owing a great deal of inspiration to Microsoft's 'Metro' design, however, "the flexibility of the material creates new affordances that supersede those in the physical world, without breaking the rules of physics"<sup>35</sup>. The use of metaphor is lightweight in comparison to previously discussed instances and refers to likeliness to physics than any real world preexisting object. Material Design relies on the interplay of light and surface to provide context to interactions.

With this use of idioms and their affordances, a shift from graphical user interfaces (GUI) to natural user interfaces (NUI) is apparent and supported by the semiotics attributed to flat design. "The

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<sup>34</sup> (Meyer, 2015)

<sup>35</sup> (Google, 2016)

objective of NUIs, as described by its advocates, is to deliver intuitive, seamless experiences that unfold through natural human input”<sup>36</sup>. Microsoft state that users should interact with content without the use of metaphor in an unmediated way and persevered in creating ‘Metro’ in which users manipulate objects directly. By learning the idioms, affordances and finally the intuition which touch merits, users were exposed to a new paradigm, beyond the point and click of metaphor based GUIs.

The absence of mediation that ‘Metro’ introduced and the various applications of flat design since have endeavored to orchestrate a euphoric sense of flow where interaction is almost invisible. The practice of less is more requires a careful consideration of idioms which are easy to learn and reflect the capabilities without limiting interaction. A concise knowledge of the use of interface is inextricably connected with designing an interface with minimalism and flat aesthetic. The act of reduction requires an intimate knowledge of user’s expectations and goals. The success criteria mentioned above is vital in creating this balance between function and aesthetic.

In terms of content display and structure, the use of lists as an idiom is the most frequently employed. Typically lists expose content by a process of iterating through a hierarchy of levels each delineated by a relevant combination of text, labels, images and controls. Similarly, grid structures are used to display content and organize hierarchy and maintain order in icons by abiding to regular rows and columns. Microsoft’s Metro UI, one of the earliest examples of this grid idiom, is a unique example of how content can be displayed, seamlessly integrating notifications and applications. Other examples which are less impressive in the reach of their abilities is the iPhone home screen and media galleries of both iOS and Android. Navigation is intuitive and simple often scrollable or navigated with horizontal swiping.

Further use of horizontal navigation can be found in the use of carousel idioms. The browsing of content through thumbnails or textual based content is synonymous with Apple’s landscape orientated music application and open tabs in web browsers. Used to present a small set of information often assigned some degree of importance or promotion, the carousel idioms may

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<sup>36</sup> (Wixon, 2008)

advance through the content automatically in a cyclical loop. This both offers the user affordances on how the content can be navigated while the soft animation enhances the experience of browsing.

Finally, cards, a new but vastly employed idiom that has greatly enabled the bedding of responsive design. Deeply rooted in the foundation of Google's strictly adhered Material Design, cards exemplify the modern desire to display media rich content, social media controls in a self contained interactive area. Taking elements of the aforementioned idioms, cards have become a fully realised UI element. Content can be uncovered with deeper interaction while settings and other reserved functionality is contained within a single call to action. Animation such as card flipping further exposes content or optionality.

Remaining is the clever drawer idiom which may be used to display vertical lists of navigation or subcategories. Hidden unless accessed by the now well established ham burger menu icon, the revealed panel contains primarily textual information coupled with iconography and additional embellishments which provide access to disguised complexity.

### **3.2 Form Follows Function**

It is no secret that the desirability of the global metaphor that was born from Xerox PARC has been ultimately debilitating. NUIs with multi touch gestures are increasingly dominating and designers are understanding the need to design idiomatically. An example of this transition can be seen in instrument simulation. Simulators are attempting to improve on the real world simulations and take an expressive and unique idiomatic approach that posits the user to learn the interface through an exploration of visual and aural sensors through gestural interactions.



Figure 3.2 – Instrument Simulator

The culmination of how designers have reinterpreted these concepts of design has led to the enhancement of user experience. Obeying the precarious nature of the aforementioned simulation has contributed to the phenomenon that is the aesthetic-usability effect and its significant implications regarding performance and satisfaction.

In figure 3.3 below is an example of a more expressive design featuring a purely idiomatic design. The app Rhythm Necklace allows users to intuitively cut and produce tracks by creating patterns of geometric shapes which can be manipulated, rotated and mapped to one another. The user is able to explore the relationship between various shapes by learning the interactions and tonal quality. Meara O'Reilly, one half of the creators of the app, when talking to online blog The Creators Project noted "There seemed to me to be a big gap between an innate human ability to perceive complex rhythms and our ability to access and reproduce them through notation"<sup>37</sup>. The

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<sup>37</sup> (Holmes, 2015)

myriad of rhythms and journey of exploration offered by Rhythm Necklace's abstract but efficient interface focuses the experience of creating music as an expressive art form.

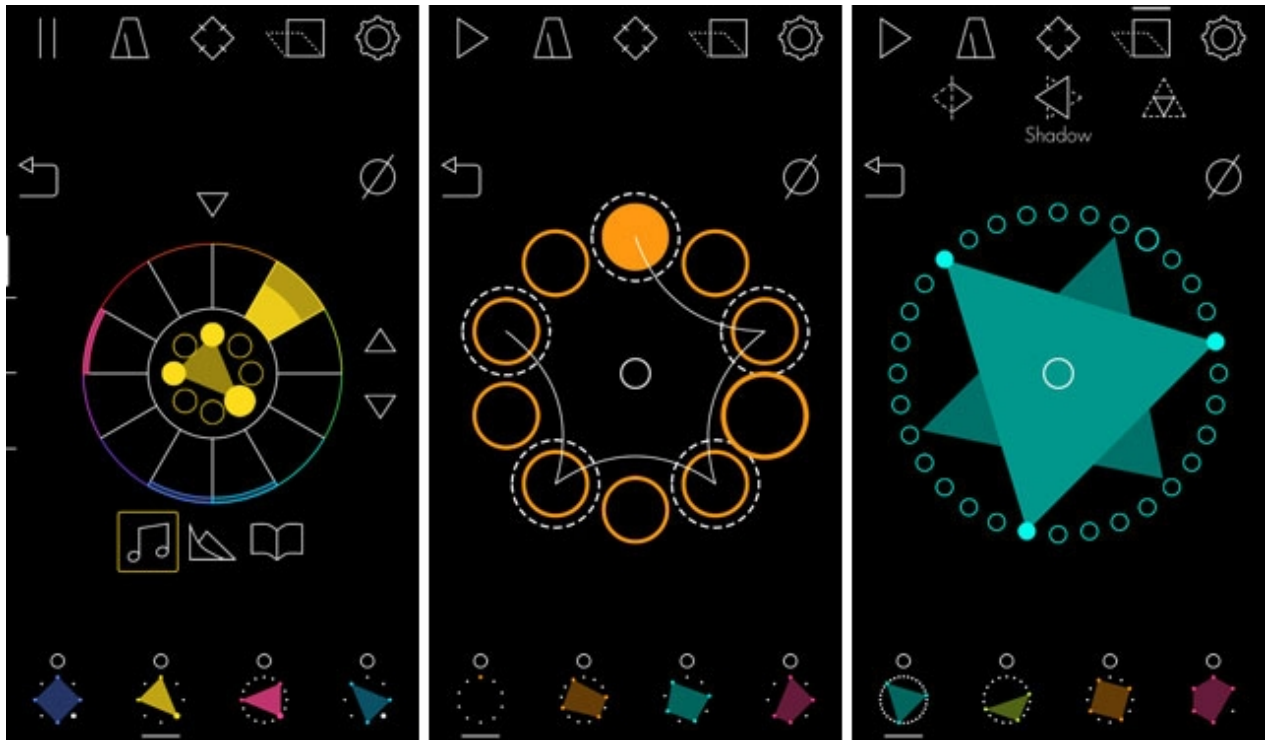


Figure 3.3 – Rhythm Necklace

To refer to Material Design again and specifically the use of idiomatic design where buttons are concerned; Google have implemented a hierarchy in their juxtaposition of raised and flat buttons. Raised buttons take precedence over other controls and users acknowledge this due to the ubiquitous nature of the floating circle and its inferred function. Flat buttons are simply printed on surfaces in instances such as toolbars and where an action need be unified with a dialog. To dissect Material Design would be a feat in itself as it is extensive and the spec is a living document. It is however, a successful implementation of flat aesthetics which serve functionality in a considerable and user experience-conscious manner. Interaction with flat 2.0 is so well orchestrated that it could be considered transparent.

### 3.2.1 Mobilligy Case Study

Mobilligy are a company that created an application which manages the payment of monthly utility bills. This app was later redesigned by SFCD in accordance with iOS7. The design is intent on creating a brand awareness and experience for users in accordance with user feedback, culminating in an engaging, easy to use and trustworthy interface.

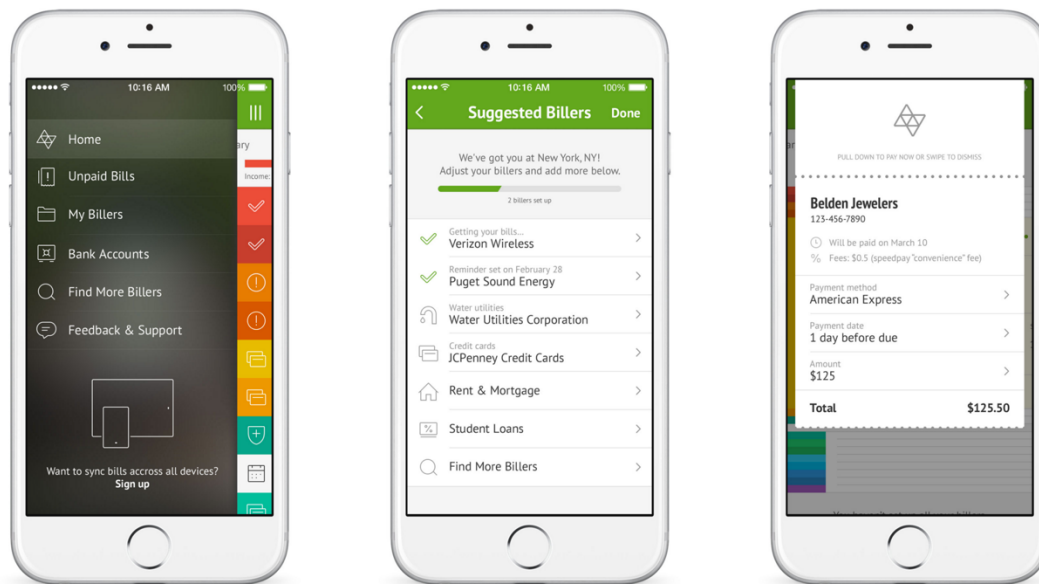


Figure 3.4 – Mobilligy

The home screen pays homage to Material Design in its powerful visualization which lends to helping users understand priority and focuses on optimizing productivity. Not dissimilar to traditional print design structures SFCD have created hierarchy, meaning and an immersive experience in a consistent environment of idiom and typographic centric design. First use scenarios welcome users and establish meaningful idioms and visual cues that are easy to learn while guiding users through steps, reinforcing trust and simplicity through thoughtful arrangement and colour.

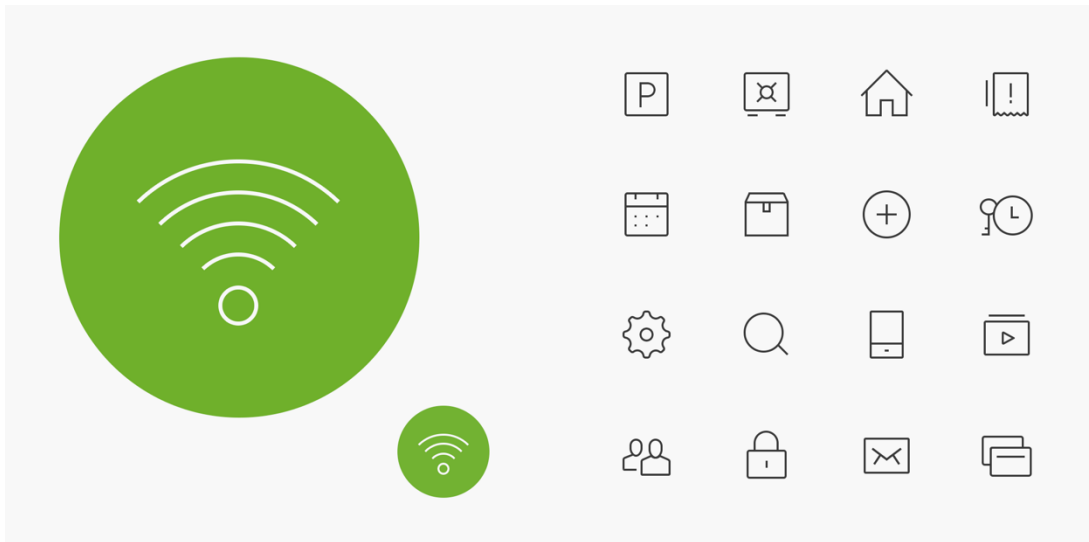


Figure 3.5 – Idiomatic Icons

The use of idiomatic design in Mobilligy is an example of an interface that restricts the amount of atomic elements in the vocabulary and uses idioms formed from application specific commands. Many of the icons in figure 3.5 are unfamiliar to users at first glance. Some are reminiscent of icons that are ubiquitous and universal like *Wi-Fi*, *home* and *settings* however Mobilligy introduces each icon and their respective function in the new user scenarios and subsequently these simple, clean and flat icons can be remembered and manipulated with ease and autonomously in time. “Each icon is reduced to its minimal form, with every idea edited to its essence. The designs ensure readability and clarity even at small sizes”<sup>38</sup>. All these icons have been reduced to a simple, intuitive, actionable and consistent form crafted with precision, inducing delight and ease for users.

This adaptation of what flat design has established since its conception and the judicious alterations made to enhance usability calls to mind a quote by Margolin that resonates with the topic of this paper and the responsibility of designers: “Designers occupy a dialectical space between the world that is and the world that could be ... To plan effectively in the present requires a vision of what the future could and should be like”<sup>39</sup>.

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<sup>38</sup> (Google, 2016)

<sup>39</sup> (Net, 2016, p. 36)

A final example of form meeting function can be found in the iOS app Fontspiration where one can “create custom typographic designs using hundreds of fonts and dozens of built - in animations”<sup>40</sup>. Fontspiration is targeted at designers and enthusiasts of typography and so this app inherently required a clean interface where type and font could be distinguished and prioritized. The interface offers a small set of tools with extensive ability to customize font. The use of idioms and minimal icons again utilizes the ability of users to learn and intuit controls, allowing a breadth of users from professionals to casual users to access this app.

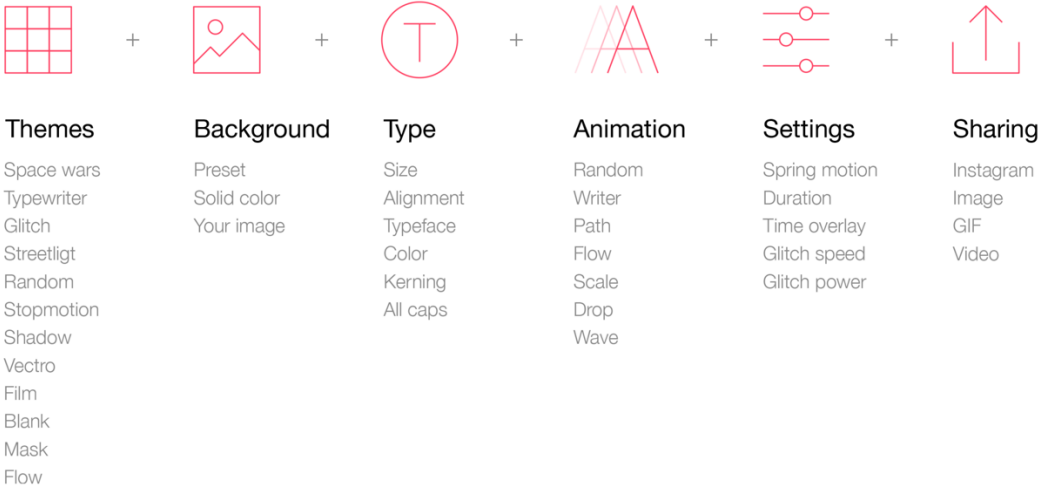


Figure 3.6 - Fontspiration

Flat aesthetics, bold colours, sliders and raised buttons all take inspiration from material design guidelines offering affordances at every interaction with the app. Visual responses from both idioms and text offer an intuitive experience and iconography aptly uses the prevalent Helvetica Neue font style as a foundation for its design.

<sup>40</sup> (Apple Inc., 2014)



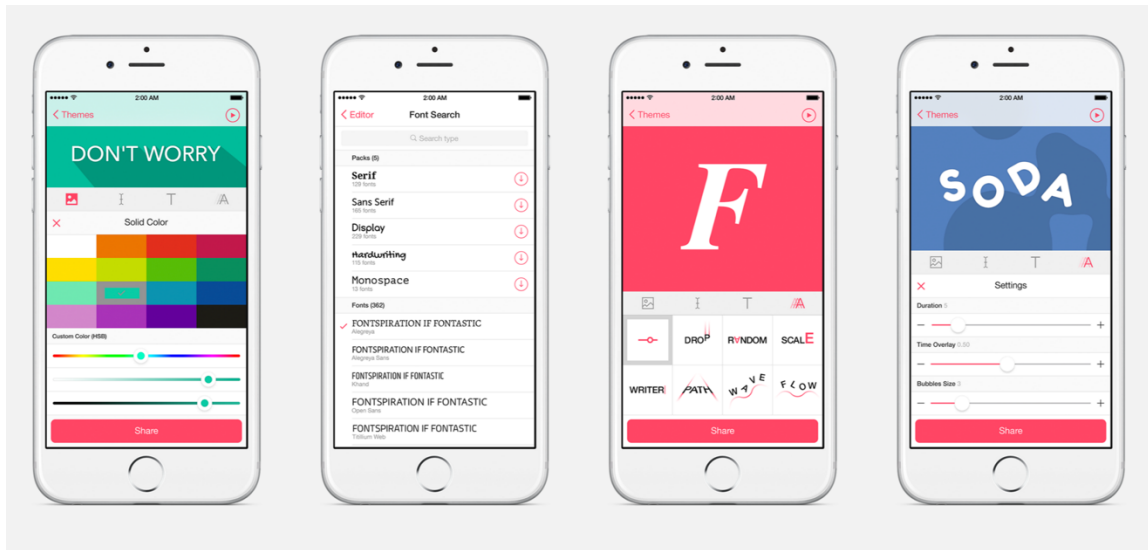


Figure 3.7 – Fontspiration

### 3.3 Mobile Interfaces and Influences

Mobile devices have by extension become augmentations of users. The ubiquity of bandwidth, demographical shifts and idiomatic learning have enhanced the experience of interacting with these mobiles. Acknowledging this has resulted in much of the interfaces that dominate our screen space today. This cross – platform consistency is crucial and with mobile devices accounting for the greater percentage of global internet platforms, websites have been pushing for a responsive transition across devices.

Mobile interfaces, due to the physical restrictions and specific uses forced designers to find the best representation suited to communicate information whilst supporting branding objectives and goals associated with target personas. Primarily concerned with this goal-directed framework rather than an aesthetic removes the deliberation of taste, exposing a clear articulation of an interface foundation. Flat 2.0, with its concise use of affordances and user – centric approach is derivative of mobile computing. The mobile interface and its requisite idioms has inspired the flat design prevalent in a vast majority of internet sites and operating systems.

Considering the primary use of mobile devices is browsing - whether it is social media, music, internet results or emails - the lack of input possibilities and limited screen real estate meant a

unique set of idioms emerged capable of enriching the browsing experience. Handheld devices, due to their limited available screen real estate, are accountable for the evolution of powerful idioms such as carousels, swim lanes and cards as well as stack elements, not to mention the controls that have become commonplace.

Ultimately, users in 2016 have amassed a wealth of understanding and capability to decode idioms and recognize affordances. The theoretical framework of understanding signs, or semiotics, has advanced beyond the limitations of natural language as a model for other communication. Users are now instinctively able to perceive relationships, identify hierarchy and interpret embedded meanings. Natural User Interfaces (NUIs), more often considered to be multi-touch interfaces are intended to be interacted with in a direct, unmediated way.

### **3.3.1 Penguin Books Case Study**

Penguin Books (<https://www.penguin.co.uk/>) recently unified their web presence bringing their brands and authors under one concise digital offering. With a collection ranging from penguin classics to modern Ladybird editions of *Peppa Pig*, Penguin recognised the broad difference in their audience. Pursuing a consistent visual language that was capable of reflecting their iconic design background to both children and adults (digital natives and migrants), resulted in a successfully designed and quintessential example of Flat 2.0 abilities to be both visually pleasing and intuitive to navigate.

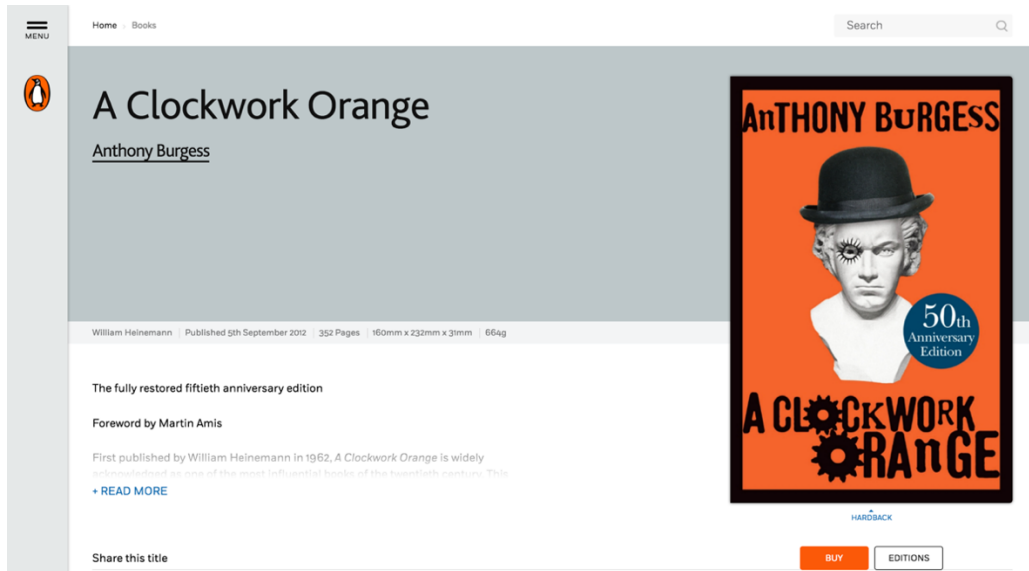


Figure 3.8 – Penguin Books

The side bar navigation shows the optimal use of the drawer idiom accessed by the ham burger menu, anchoring the site content neatly within one button. The icon, font and colour scheme update to reflect the page content between Puffin, Penguin and Ladybird. Remaining consistent with Penguin’s design heritage, the sidebar is reminiscent of a book spine affirming the user’s place in the site.

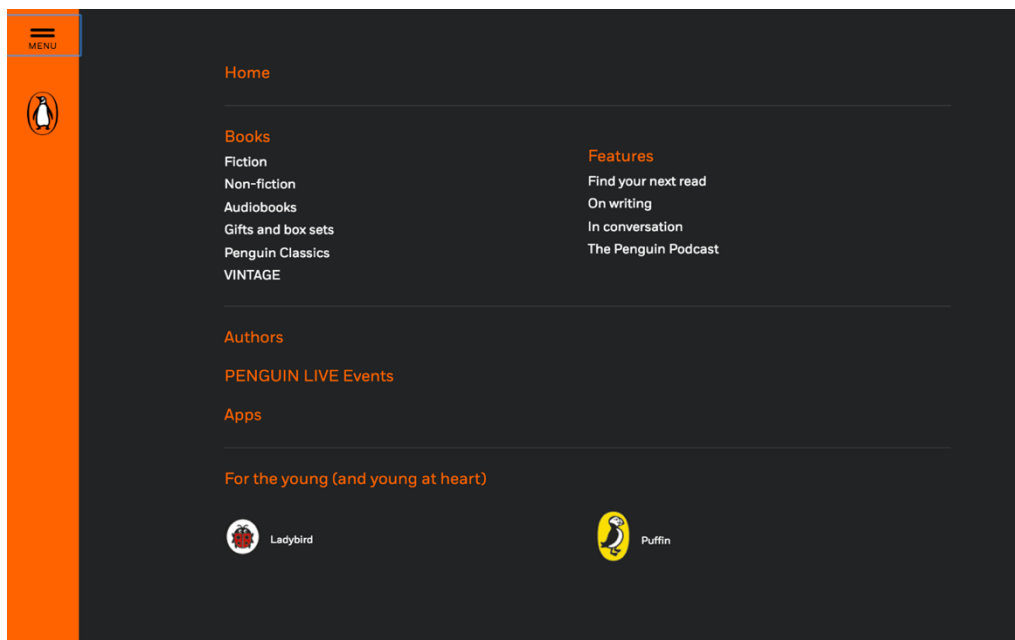


Figure 3.9 – Penguin Books Drawer Idiom

Most notably, the design employs a structure of tidy minimal visual containers which differentiate the content and display hierarchy. The design is fluid and pays homage to the mobile application interfaces outlined earlier in this chapter, particularly the card idiom. Ben White from Clearleft, one of many UI designers responsible for the renewed branding of the site, in an interview with Net magazine said that the design was developed around a system that could remain consistent with the Penguin brand while allowing other brands to express themselves, further adding “The contents of the page and the hero image – much like a book jacket – allow the individual brands to shine”<sup>41</sup>. This minimal space and card layout enabled the aggregation of relevant content and media to coincide in a successful flat interface.

The expansive space between elements and the natural, humanist type of Bliss makes reading the content of the site easy for adults of all ages. Ladybird and Puffin use more child friendly sans serif typeface again to reinforce the user’s place in the universe of Penguin books.

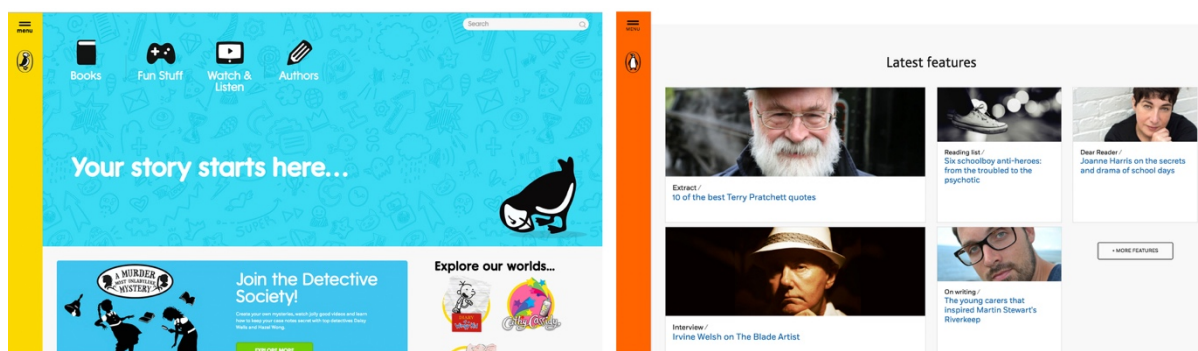


Figure 3.10 – Puffin vs. Penguin UI

The design of the interface employs such a successful degree of transparency that the user experience is heightened, while avoiding the current pitfalls of flat design. User engagement is fundamental to the interaction of the site and so while maintaining a clean uncompromised aesthetic, the interface functions harmoniously.

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<sup>41</sup> (Net, 2016, p. 67)

Children can navigate the site with ease as the Ladybird section makes clever use of relatable colour schemes, large imagery and fast, exaggerated animations. The interface is dominated by imagery which takes precedence over textual content. It is worth noting that contrary to the outlined uses of skeuomorphism in chapter one, the Ladybird interface maintains the recurrent theme of the sites interface only choosing to present a selection of icons which bridge the gap between real world metaphorical representations and flat iconography. The affordances are clear and easily interpreted. The icons are further supported with text to fully underpin their intended purpose.

Large navigational arrows encourage further exploration of the lists and cards. That this is supported by a friendly, approachable verbal tone further supports and mediates the journey of a young visitor through the site.

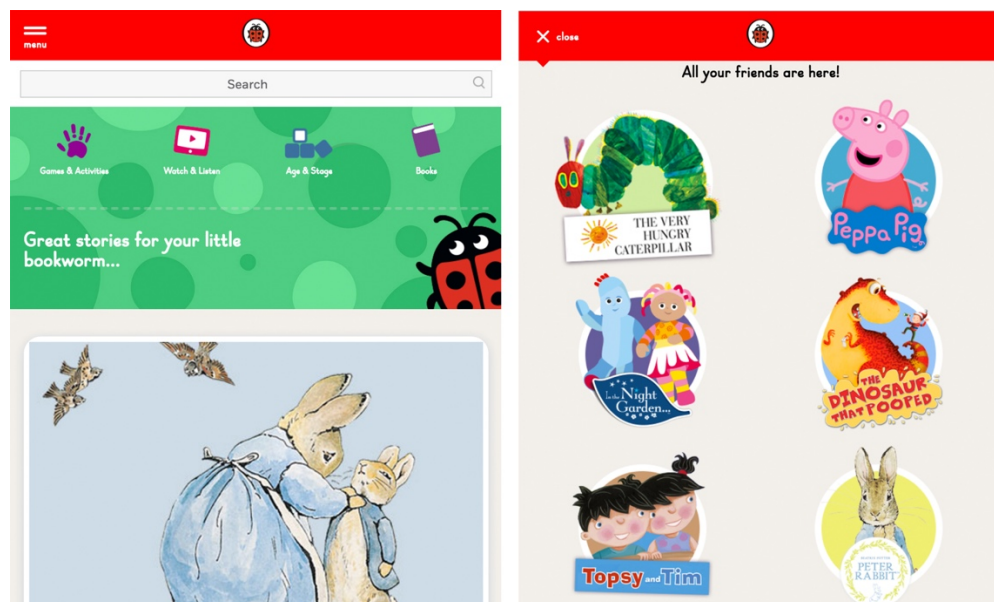


Figure 3.11 – Ladybird Accessible UI

Puffin also make use of this text-assisted hybrid iconography, while the corporate Penguin site removes all navigational prompts and instead encourages an experience of autonomous discovery. The strength of the Penguin interface is the careful use of flat design and idioms. The experience created from this design is one of pure satisfaction.

Arising from this desire to render a UI capable of containing extensive content but displaying only what is relevant is the trend that has consumed designers since the initial advancement away from skeuomorphic interfaces. The necessity to deliver a responsive and identifiable user interface across a range of platforms saw flat design and its idioms become more prevalent in desktop interfaces.

The scalability of grids, lists and card structures coupled with the flat aesthetic and crisp typography enables companies to ensure that branding identity and usability are central to their online presence or software.

Users have adapted to these forms of display and the subsequent navigation. The use of the previously mentioned characteristics in user interface has led to the simplicity of interaction that flat 2.0 strives for. With a minimal display of relevant content, users can be led through a process of interaction.

## Chapter 4. The future of Interfaces and Passive Users

Flat design is often criticised and likened to a fad or trend<sup>42</sup>. It is true to say that if the inspirations that drive Google and Apple's design guidelines for iOS and Material Design are adhered to pedantically, much design consideration is sacrificed in favour of what is essentially a template. Emmet Connolly expresses concern for the commodification of flat design in an article for Intercom when he writes:

“That fresh look quickly becomes a cliché. This descent towards aesthetic monoculture was helped by the ease with which this particular style can be cheaply imitated: stick a blurred photo in the background, lay some centered Helvetica Neue on top and you're already halfway there!”<sup>43</sup>

This is true for a large number of cases, however, more optimistically and in light of Penguin's efforts, it can be argued that this minimalism is a sign of new mature users who are capable of intuitively interacting with UIs without the overbearing hints and calls to action. Connolly's counter-statement lends itself favourably to this argument: “The training wheels have come off, and so designers are free to express themselves stylistically again, less encumbered by the obligation to educate. Finally, the smaller size of mobile screens has contributed, most naturally accommodating simpler, less fussy designs.”<sup>44</sup>

The flat aesthetic of today's visual language is without doubt a reflection of a mature user, capable of disseminating idioms and recognizing affordances. The concentration of images, density of visual cues and notifications confront users frequently, stimulating imagination by way of expectation or memory. However, due to the inoffensive and clean execution of flat UI, users are accustomed to this interaction to the extent that they barely notice their impact, forming an emerging passivity in user interaction. The muted palette, soft transitions and flat aesthetic follows recent understandings that digital natives and immigrants alike have progressed to a level of

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<sup>42</sup> (Stalzer, 2013)

<sup>43</sup> Connolly, E. (2015)

<sup>44</sup> Connolly, E. (2015)

capability that requires little to no signifiers, moving interface design in favor of an idiomatic approach.

Duolingo, an award winning application which teaches users a new language by using the latest theories in education and using games to motivate learning, boasts a flat, simple design. The main interface is comprised of several unlockable skills to be acquired, relying on gamification to enhance the experience and ensure the successful completion of the basic requirements of the language being learned. Users range from school children to retirees with an average user age group of 30.4 years according to Peter Lord<sup>45</sup>. The clean interface makes the learning experience efficient and enjoyable, keeping users in a flow of contentment. Regarding the minimal interface, founder Louis Von Ahn and lead designer Marcel Uekermann said: “The overall goal has been trying to keep things as simple as possible. It’s tough because we’re trying to get people to do something pretty complicated ...We reduced it to a minimum to focus on the stuff that really matters.”<sup>46</sup>

#### **4.1 Peripheral Interfaces**

Google’s investment in the internet-enabled thermostat Nest is an indication of the transition which user interface and experience have evolved.

Nest is a thermometer which automatically adjusts room temperature according to user interaction and habitual data. Now considered archaic among anticipatory devices which are beginning to advance to the point of assisting in the elimination some 35,000 decisions a user makes in a day, Google Nest, Google Now and Digit.co are all exemplary models based on the principles of flat 2.0.

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<sup>45</sup> (Lord, 2014)

<sup>46</sup> (Maly, 2012)



The third generation Nest features two interfaces, using proximity sensors to alternate between relevant areas of information. Differing from a large numerical display to an information dense screen allows the user to adjust temperature, weather and calendar settings.



Figure 4.1 – Nest Interface

This minimal display reduces elements to their core, displaying only necessary information for the user. Darkening the peripheral options while the device is not in use relies on the hierarchical structure of list idioms, allowing the user to interrogate icons further while subtly suggesting affordances to the required navigation and interactive elements.

The visual language of the Nest interface is minimal, approachable and at its core flat. The ‘Nest’ focuses almost entirely on the user experience and adopts the necessary balance of aesthetics and functionality which drives the further implementation of flat user interfaces.

This transitions into the mobile product with ease of integration, creating an all-encompassing user experience with dedicated cross-platform consistency. Being an android product, the interface of the mobile application shows an unrelenting adherence to Google’s material design guideline specifications. The sparse use of interactive screen real estate reminds users of the simplicity of

the task while affordances such as the drawer idioms and list structure allows for deeper investigation.

Despite the application’s iconography and layout being minimal and its affordances clear, the most impressive affordance and aesthetic feature is the dial and its interaction. Appearing as simply a repetition of short, interspersed lines against a coloured background of orange or blue, the ‘nest’ assumes the intelligence of the user to understand the signifiers and affordances. A single bold line indicates a position which then corresponds to the number displayed.

The Nest is a pinnacle of success in terms of the user interface and its subsequent effect on the user’s experience. Receding into the periphery of a user’s daily life, the Nest is technologically capable of working unassisted. This in turn has inspired a user interface that encapsulates the necessary need to revert to flat, minimal design where affordances are intuitive and interfaces move closer to a paradigm of invisibility.

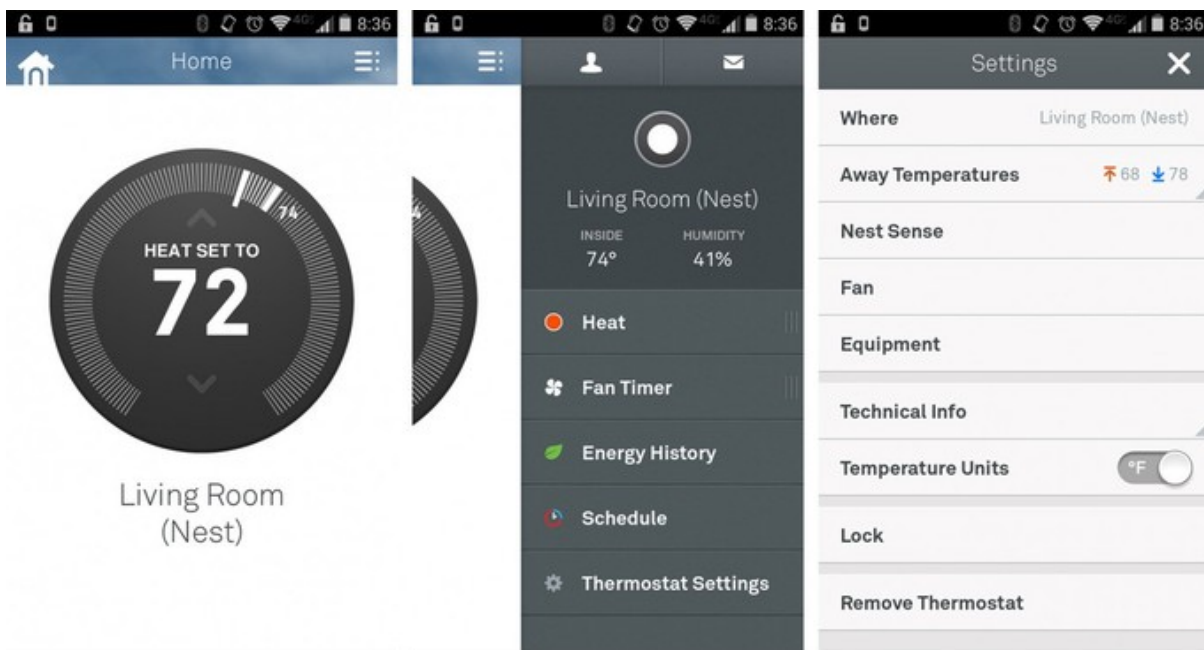


Figure 4.2 – Nest Mobile Interface

## 4.2 Emerging User

Growing from this mature user and user-centric interface is a gentle provocation toward the user to generate rich narratives that challenge the conformity of life. The transparency of the design is informative and instrumental in successfully passing instigation and action. This seduction renders the user powerless in the digestion of corporate values in an evolving digital environment. Interface aesthetics which imply the suggestion of rewarding the sensory can invoke a seed which engages the subconscious, implying greater personal discovery. It is like Rachel Bowlby said “The grand magasins... appear as places of culture, fantasy, divertissement, which the customer visits more for pleasure than necessity”<sup>47</sup>.

Design is now beginning to enhance an environment where analogue meets digital in a seamless and natural way, concurrent with behaviour and contextual needs: Users are aggregating, forming a community of passive consumers that will yield to the propaganda of flat design.

This aggregation of passive users is shaping the future of user experience. More intent on observing notifications and the elimination of choice, a user experience with vast potential can evolve from the further materialization of data of modern visual language. Take science fiction for example: “[it] can point to a series of themes that illuminate contemporary imaginings of the relationship between science, technology, and society”. Spike Jonze’s *Her* (2014) makes a conscious decision to reinforce the possibility of a technology which mediates life. While being invisible, it merges the fine line between aesthetics and functionality. What *Her* proposes in this sense is a future where technology is people-centric - a world where technology has been allowed to recede and assume a peripheral role, consuming users in a passive and anticipatory design.

This peripheral technology is slowly emerging, and can be seen in the interoffice chat and organization app, Slack. This app has advanced its use of ‘chat bots’, a piece of software able to perform automated tasks for the purposes of efficiency and productivity. This interactivity with bot-mediated applications is natural and casual, making the experience rewarding and resonating.

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<sup>47</sup> (Bowlby, 1985, p. 6)

An emerging change in user interface is on the horizon as ‘bots’ endeavor to eliminate the need to learn how to use an interface. Instead, as Ben Brown of XOXCO says: “Now you just text or tell the bot and it does it for you. It’s like talking to a friend or talking to a coworker instead of talking to a machine.”<sup>48</sup>

The predicted user experience trends for 2016 are fundamentally encapsulated as anticipatory design, where devices anticipate our patterns and desires, performing quietly in the periphery of our daily life. The successful transposition of technology is forming an augmentation where interfaces don’t require the same level of attention as before; to a simple efficiency where technology fades into the background and is implemented seamlessly, after all it is widely considered that “the best interface is no interface”<sup>49</sup>. Employing this degree of transparency in the design provides a greater sense of autonomy in the experience of this interaction.

The user’s behaviour and responses are directly influenced by the persuasive nature of modern interfaces. Visual cues are constantly presented to users, navigating them to a given point, controlling their actions and instigating behaviour. This design acts like a reincarnation of its print ancestry in its ability to propagandize and encourage communication, consumption and influence communities both local and global.

People are conditioned to respond accordingly to the signs and symbols observed around them, rigorously controlled and governed by designers. In this symbolic system the user is bound by a set of directives similar to grammar, which the following quote describes: “These are the grammatical rules which I have to follow almost blindly and spontaneously, and of which I am hardly conscious. If I were to bear these rules in mind all the time, my speech would break down”<sup>50</sup>. Not unlike the symbolic order of language, we unconsciously follow established paths that visually apprehend the user in transit.

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<sup>48</sup> (McHugh, 2015)

<sup>49</sup> (Krishna, 2015)

<sup>50</sup> (Kul-Want and Piero, 2011, p. 58)

Flat 2.0 attempts to accomplish a given task efficiently and while aesthetics are important, function is at the core; navigation is intuitive to the extent of being invisible. A desire ensues to mould technology to the body, to subsume the digital world. This effort to conceal technology is fast becoming the trend which inspires the integration of technology and daily life as the internet of things becomes a more pertinent reality. To achieve such seamless integration, a dedication must exist in the design to create interfaces and experience which meld aesthetics and functionality. It is as Virilio (1995) mentions:

“A programmed symbiosis of man and computer in which assistance and the much trumpeted ‘dialogue between man and the machine’ scarcely conceal the premises: ... the total, unavowed disqualification of the human in favour of the definitive instrumental conditioning of the individual”<sup>51</sup>.

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<sup>51</sup> (Dunne, 1995, p. 21)

## Conclusion

As the transparency and aesthetic harmony of interface design closes the gap between humans and machines, we find ourselves subtly aware of our enslavement to a larger mechanism of semiotics. We unwittingly adopt and respond to rules and implementations created by designers where objects are presented, not merely to be recognised, but rather interpreted and understood on a cognitive level. This is reminiscent of Jean Baudrillard in *Xerox and the Infinity* - "The new technologies, with their new machines, new images and interactive screens, do not alienate me. Rather, they form an integrated circuit with me" (Dunne, 1999).

This suggests that today's generation of designers and consumers, perhaps due to the innate reality that digital migrants have existed so intimately with technology and the various appendages that condense our social interaction, will strive to a people-centric world, where social communication is not carried out from the safety of a mobile devices superseding face-to-face interactions - an acceptance that technology should in fact recede and mediate casually in the background.

Flat 2.0 is being used as a powerful tool to propagandize fleeting desires, perpetuating a society of yielding consumers and passive participants. This interface design strips down visual elements to expose their essential functionality presenting a clear and engaging interface to facilitate this dialogue. This emerging visual language is seductive, comfortable and well-mannered, reaching for a pinnacle of semiotics and function- a mixture of abstract and familiar, neither pertaining to exist nor alien. Designers have been active in removing all but the necessary elements, leaving carefully arranged geometric shapes, clean crisp colours and line. Large shapes, Sans-Serif typography and a resourceful use of icons has paved the way for the user, functioning as the most coherent, multilingual and malleable design.

Contemporary life shows a reliance on the pervasive network and the intimate presence of flat design. A broad change in our sense of proximity and possibility has been heavily influenced by our interaction with devices and their embedded design.

Interfaces have increasingly enhanced user experience and the progression to flat 2.0 has seen designers revert to the original purpose of technology in a valiant attempt to make life simpler.

Aaron Shapiro CEO of HUGE INC wrote in fastcodesign:

“The next big breakthrough in design and technology will be the creation of products, services, and experiences that eliminate the needless choices from our lives and make ones on our behalf, freeing us up for the ones we really care about: Anticipatory design”.<sup>52</sup>

This is altogether a possibility as design becomes intuitive with experience at the core of its functionality. No longer do users need to make decisions instead the designer has an obligation to design an interface which eliminates as much extraneous content as possible. An ecosystem of goal-orientated design and data collection is being born out of the the clinical aesthetic of interfaces in 2016.

What concludes is a design that has teased the margins of trend and fad only to emerge firmly as a succinct recognition of a user’s ability to decode affordances, idioms and semiotics without instruction. Ultimately this progression has made possible the advancement of user experience as designers slowly ascertain an integration of balance in favour of a user-centric interface. This paper affirmatively delineates the once necessary use of metaphorical representation and the minute circumstances for which it still warrants application, however, central to the argument of this paper is an undoubtable evolution of user experience which can only be attributed to a clinical user interface, dedicated to the stipulations of a flat aesthetic otherwise referred to as flat 2.0.

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<sup>52</sup> (Shapiro, 2015)

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