

# Use the Difficulty through *Schwierigkeit*: Antiusability as Value-driven Design

*Research-in-Progress*

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## Abstract

*In the style of a polemic discursive essay, Antiusability (also known as Schwierigkeit) is introduced as a radical design paradigm to reawaken dedicated awareness of the user-system interface through challenge. A philosophical work in flux, it is described as a kind of science (or logic) of difficulty with an underpinning that promotes the generic greater good in usability per se.*

**Keywords:** Usability, Design, Philosophy, Difficulty

## Introduction

Film actor Michael Caine's approach to the vagaries of life is summed up in the dictum he once coined, "Use the difficulty" (Berkun, 2009). This aphorism also encapsulates the *raison d'être* of a new design paradigm dubbed Antiusability and this paper will offer a brief philosophical exposition of ideas in this regard with its structure being essay-style, almost in homage to Marshall McLuhan's mosaic approach to discursive scholarship (Carpenter & McLuhan, 1970). Antiusability is a novel way of design that centres on the finely tuned integration of graduated difficulty into user interfaces to systems in a variety of contexts. These include computer-based systems as well as business processes and other socio-technical constructs. In the case of Michael Caine's motto, his attitude to the routine of living emerged from early career advice given to him as a novice stage actor. Caine apparently had asked the director of the play he was in at the time for guidance on how to deal with a chair that was blocking his way on-stage. The director remarked that if the scene was dramatic in nature then Caine should pick up the chair and smash it down. However, if the moment was comedic in tone, then the actor should trip over the chair. This onstage chair was an obstacle, yes, but a difficulty that could be exploited in a productive manner. In a visceral sense, it was a kind of design thinking where the chair changed from being an object in an interface that was not being used to an object with multiple affordances born out of difficulty (Brown & Katz, 2009; Norman, 2013).

The way one is compelled through unconscious conditioning to use any device (or system) by virtue of its design can modify the behaviour of a user for better or worse. Design components can be either intentional features or collateral obstructions or both. Nielson's (1993) System Acceptability model includes attributes that enable the design of systems that take social and practical needs into consideration. The usability attributes learnability, efficiency, memorability, error rates and user-satisfaction are used to maximize end-users effective use of available functionality. Zhang's (2007) design principles extend the combination of social and practical acceptability by focusing on human motivation as the primary driver of system acceptability. It is understood that end-users exhibit avoidance and acceptance behaviours. The design principles view organizational needs and human responses to technology using a positive lens. This is not to say that the best systems do not provide optimal levels of challenge and timely and positive feedback (Zhang, 2007; Nielson, 1993; Reeve, 2005). It is accepted that challenge and competition are motivational drivers and components of Antiusability (Reeve, 2005).

The Law of Unintended Consequences can wreak havoc with even the best of creative social actions for the greater good (Merton, 1936), but even random impediments can be geared to result in positive side effects on the whole, depending on the adroitness of an agile designer. Tenner (1997) documented “revenge effects” of technology through examples of unintended consequences in human interactions with technological systems. Studies such as this provide a useful anecdotal record for future design initiatives that mine the difficulty (or challenge) quotient.

## Origins of usability and *Schwierigkeit*

According to the 19th century English author Thomas de Quincey, who first conceived of the notion, the usability of a device superseded its utility in terms of reflective importance (de Quincey, 1842). In his coining of the term “usability,” de Quincey may have presciently hinted at the notion of affordance, which refers to the constellation of physical aspects constituting an object that immediately suggests how it can be used (Gibson, 1979). An affordance is, in fact, the salient utility of a thing and provides a focus not on the tool itself but the interaction and the end-user. For example, the mass and form of a typical hammer can permit a novice user to infer how it is to function in an ideal sense for an optimum purpose. One can instantly decode and understand the smiley face emoticon :-) in online interactions but then the impediment of interpretation has to be dealt with as to its meaning in contextual use. Following on from this, tweaking the affordance of a device (or system) could have the potential to fine-tune its influence over a user. The notion of utility primarily refers to the function of a device (or system.) Usability, though, is both a quality of a device (or system) and a current area of academic endeavour within the discipline of Information Technology. In the former connotation, usability is broadly defined as the efficiency and level of personal satisfaction with which users can accomplish tasks in a specific environment of a product. High usability implies that a system is generally easy to learn and remember; efficient, visually and perhaps aurally gratifying and fun to use; as well as prompt in its capacity to recover from errors (Nielsen, 1993).

Antiusability is presented as a radical design concept to reclaim conscious dominion and self-control of a system’s user interface. The AutoContent Wizard in PowerPoint has been accused of overly constraining corporate presentations in its goal of providing standardized assistance (Parker, 2001). “Graffiti” script as once input on early hand-held Personal Digital Assistants (such as the Palm organiser) conditioned some users to use the same writing style with a traditional pen and paper. Who is in control, the user or the system? Design thinking can allow one to choreograph the obstacles that may arise in a system interface for optimal effectiveness and allow users to regain the feeling of being in charge over their interaction habits rather than being madly addicted to the process. Antiusability is not meant to be “against” usability as might be hinted by the name.

In fact, Antiusability can be seen as a component of design principles that include an understanding of the importance or autonomy, competence, performance, mastery achievement and user satisfaction to motivation (Zhang, 2007). It does not seek to challenge the status quo of usability as a sub-discipline in the analogous fashion of, say, the Anti-Psychiatry movement of the 1960s (Boyers, R. & R. Orrill, 1971; Cooper, 1967). To alleviate any possible misunderstandings of intellectual hostility, an alternative title for Antiusability that can be used in conjunction is proposed, this being *Schwierigkeit* which is German for “difficulty.” The latter nomenclature is an implicit nod to Heidegger’s usage of *Dasein* (“being there”), a German word that transcended its humble roots to become a fundamental concept in the existential philosophy embodied in his magnum opus *Being and Time* (Heidegger, 1962). The irony is that the word *Schwierigkeit* would most likely be difficult to pronounce for a non-German speaker, which in itself could amplify the salience of what Antiusability actually means.

The notion of *Schwierigkeit* seeks to position itself as the study of calibrated difficulty in practical design so as to accentuate the greater good in system use. A combination of design that understands the end-user’s performance and functional goals, appropriate entry skill level and informational and timely feedback to assure flow motivate end-users (Zhang, 2007). One could argue that such a concern is superfluous given that it should be part of the whole design process per se. However, a focus on one quality, namely difficulty, can offer constraints that might spur unintentional creativity. Consider this to be a riff on the classic proverb: “Necessity is the mother of invention.” In a critical theory vein, Virilio (1986) coined the term “dromology” to define the science (or logic) of speed in society. He noted that the speed at which something like an event happens may alter its essential characteristics and that in life

which moves more rapidly can come to dominate that which is slower. It is envisaged that *Schwierigkeit* could evolve into an analogous philosophy of difficulty in society. At present, its aspirations are more utilitarian in nature.

## Examples of the logic of mundane difficulty

*Schwierigkeit* occurs within and outside technology systems. Examples include child-resistant caps on medicine bottles which are a safety feature but they do require some thought by adults in order to use them properly and security systems that include rarely-used questions and answers in addition to passwords and user names (Yost, 2012). The QWERTY keyboard is also a historical artefact that is representative of *Schwierigkeit* in practice. The layout was a hindrance by design to slow down users in order to prevent mechanical typewriters from jamming (Lundmark, 2002). However, its legacy in the digital age has handicapped the maximum potential typing speeds of users and may have inadvertently escalated the evolution of repetitive strain injury in the early days of the personal computer (Diamond, 1997).

Using the cultural primacy of the QWERTY keyboard as an example, Liebowitz and Margolis (1996) debated the principle of path dependence in the economics of products. This is the idea that the past is a powerful influence on the future so much so that consumers become shackled to options born out of traditions that may no longer be suitable due to advances in technology. As they commented, in an age when computer keyboards can effortlessly be reconfigured to any layout, QWERTY is still the de facto standard, even though critics may argue that the rival Dvorak arrangement is better (Weaver, 2001). Usability as evaluated by end-users that have been using a QWERTY keyboard for many years may score highly on the basis of memorability and learnability but the response to the test is determined by historical factors. If people were given an improved keyboard and understood that their efficiency would improve the design principles underpinning Anti-usability may be enshrined.

Reduced ignition propensity cigarettes are designed to be slow burning in function. *Schwierigkeit* in this case is present as a means to slow the combustion rate of cigarettes in order to assist in reducing the number of fires caused by careless smoking habits (Sibbald, 2003). Other exemplars of *Schwierigkeit* include lock and key mechanisms for security; fences and barbed wire; speed bumps on roads (Bishai, Mahoney, DeFrancesco, Guyer & Carlson Gielen, 2003; Theeuwes, van der Horst & Kuiken, 2012); “Yes-No” permission screens in computer operating systems; CAPTCHA challenge-response tests in computer systems (Yan & Ahmad, 2008) and plain-packaging of cigarettes (Freeman, Chapman & Rimmer, 2008). Password access systems can be viewed as the metaphorical equivalent of “speed bumps” on the information superhighway. And firewalls are the virtual fences of cyberspace valiantly attempting to delineate the metaphor of property in a new vista. The examples provided do not prevent the use of the artifact but they change the flow to ensure the correct button is pressed or that traffic moves at an appropriate speed.

All of these can be construed as instances where the design process has involved the “use the difficulty” principle of *Schwierigkeit* in some manner. Speed bumps are a physical structure to reduce pedestrian injuries in communities by making streets, in effect, less usable to automotive traffic. Commenting on the design of the latter, Petroski (2010) noted that the overall shape of the speed bump mound is crucial, not just for the shocks as feedback to the driver but also for the rate at which a car will subsequently accelerate after traversing the obstacle, releasing exhaust and making noise as side-effects. They may slow down travel on a road with safety in mind but they can also increase fuel consumption, pollution and noise due to the vehicle’s change in mechanical behaviour, as well as hampering the passage of emergency vehicles. The feedback provided for security systems must also provide timely and informational feedback to ensure that the usability of the system is available, as well as, the Anti-usability. An end-user would be motivated to use a banking system that assures them that their money is safe from hackers. The usability attribute of user satisfaction is improved through the introduction of Anti-usability features.

Speed bump design that adds value to the community necessitates systems engineering principles that factor in functionality, aesthetics and the law of unintended consequences. In terms of broader societal benefits, *Schwierigkeit* is a design thinking precursor to notions such as “libertarian paternalism,” the so-called “nudge” political philosophy of Thaler and Sunstein (2008), whereby a behavioural economics framework could be implemented for the state to make default public policy choices on behalf of its

citizens for the positive benefit of all concerned. Schwartz (2004) argued that choice is sometimes a paradox because too many options in life can leave a person confused, so a prod in some direction might be of use. The push of *Schwierigkeit* has applications in developing design-oriented risk management strategies to address societal and environmental issues such as climate change, homelessness, obesity and problem gambling.

## **Gambling with usability and the saving grace of *Schwierigkeit***

Problem gambling is a major social concern (Orford, 2011). Gaming machines – or “pokies” as commonly referred to in the colloquial sense – are the Australian counterpart of the infamous “one-armed bandits” so ubiquitous in Las Vegas casino culture. By 2002, in the Australian state of Victoria there were already 30,000 of these hi-tech poker machines in active use, with many in dedicated suburban centres (Doughney, 2002). The Crown Casino in Melbourne at the time hosted 2500 of these devices. Figures from 2003 indicated that Victorian pokies gamblers lost more than \$2.3 billion because of their habit (Warner, 2004). One possible factor fuelling this addiction to gaming machines may be that they are too easy to use: toss in some coins or swipe a card, push a button or pull a lever, perch on your stool, blankly leer at flashing lights while time seems to stand still or vanish, listen to a cacophony of sound effects and lose your money or win on the rare occasion (Coventry and Constable, 1999).

Research has suggested that poker-machine gambling behaviour may be predisposed by the beliefs that players cling to about the nature of the schedule of events in a particular session (Delfabbro & Winefield, 1999). That is to say, actions could be influenced by general attitudes about randomness, probability and machine design. The anthropomorphic inclination may also be present for some women players to grow more emotionally invested in the game as they gamble and in the process treat the poker machine as a kind of “electronic buddy” possibly susceptible to desperate though imaginary intercessions for better winning streaks (Delfabbro & Winefield, 2000). Is this personification of a machine for the practical task of an elementary game a self-induced perversion of the user-friendly interface?

*Schwierigkeit* as a design paradigm could assist in modifying gambling behaviour at gaming machine sites through positive conditioning by tinkering with the interface between the user and the device. This could be implemented through subtle alterations either in the machine itself or in the immediate surrounding environment. The introduction of clocks as an attachment to gaming machines in the Australian state of Victoria has already been one strategy that could be categorized under the *Schwierigkeit* banner. Here the hindrance of time passing made evident is the difficulty that could influence a user to stop gambling at least for a moment. But there are other concrete policies that could be developed and these are the subject of ongoing research (Quinn, 2001). *Schwierigkeit* in this perspective is an ethical means through design practice of constructing a better human-machine interface. One tactic could be to ramp up the cognitive viscosity of gaming environments: In other words, design an atmosphere at venues that enables the gaming enthusiast to make a premeditated decision about what they do and not be hypnotically seduced into a gambling trance by the pokies themselves.

## ***Schwierigkeit* beyond the automatic frontier**

The general public might consider usability in its simplest guise to be, namely “ease of use.” If this is the folk hallmark then when does the pursuit for usability cease? How “easy” should things be? How difficult should things be to enable an end-user to feel they have performed a useful task? The very word “automatic” is evocative of control being wrest from human beings and surrendered to the machine. In 1960 U.S. academic J. C. R. Licklider predicted a future where people and their apparatus would be in a symbiotic co-existence of egalitarian harmony (Licklider, 1960). However, the present is swerving towards a world where humanity is almost, if not quite, becoming addicted to the technology in its supposed service as it exhibits the behavioural traits of cybernetic organisms (or cyborgs) seductively locked in closed loop systems masquerading as information ecologies (Warwick, 2004).

Almost by definition, to be automatic undermines one’s opportunity for reflective choice. Case-in-point: The current obesity epidemic in developed nations is in part probably due to the remote-control revolution in society fostering a sedentary culture (Hu et al, 2003). The affordance of a remote control device facilitates ease of interaction with a television but over-use of this commodity could lead to the “couch potato” syndrome of an unhealthy inactive lifestyle. A possible solution: Increasing the weight of

the aforementioned remote control device would then increase user effort from an ergonomic vantage. This could modestly stimulate both muscle development and calorific energy expenditure in the user, as well as inducing a greater degree of self-regulation in habitual patterns for this device. The advent of mobile computing could also be advantageous in this respect as more users snack on entertainment with their smartphones whilst on the move. Physical exercise is another premier instance of *Schwierigkeit* with its “no pain, no gain” sub-text.

Many of our devices in general are most likely too simple to use and we have too many of them at our disposal. Distraction reigns supreme with all its inherent risks. Technology that was meant to be labour saving is paradoxically the instigator of more work because it enables us to be more productive than need be (Landauer, 1995). Modern measures to save time frequently end up in being enslaved by it (Gleick, 1999). Computing technology has enabled people to live constantly in the moment, whereby virtual environments both near and far can react instantaneously to almost every user action. Indeed, a history of the mobile phone is entitled “Constant touch” (Agar, 2003) as if that is a good value. Turkle (2011) argued that feelings of personal isolation were sometimes a side-effect of the pell-mell rush to living digital in the current social media landscape. Attempts to reduce isolation in the technology networked world include the design principle that enables personalization of our mobile phone and computer screens to improve feelings of connectedness that enhance the social and practical acceptability attributes advocated by Nielsen’s design guidelines (Nielsen, 1993).

## ***Schwierigkeit* hacking our lives and the drift to slowness**

In a world of artificial frenzy, the quest may be to save small amounts of time through technology but the by-products can be anxiety and distraction. Lack of awareness on the road is a danger, particularly the attention-deficit problems associated with text messaging while driving (Regan, Lee & Young, 2009). Marks (2013) reported that a vibrating steering wheel has been prototyped that indicates to drivers where to manoeuvre when undipped headlights from oncoming cars or other visual hurdles leave them momentarily blinded. The modern woe of assault by confusion through mass interactions has resulted in the emergence of a new academic field, tentatively dubbed “interruption science” (Thompson, 2005). This has led to a growth in popular literature about the evils of distraction or digital interruption and what can be done to regain the clarity and control of attention (eg. Davidson, 2011; Klingberg, 2009; Rock, 2009).

In a New Scientist article highlighting the perils of disruption due to the “always on” culture facilitated by hyper-efficient technology, the following tip was given to inhibit unplanned office meetings with casual visitors: Sawing off a very small portion from the front legs of a guest chair makes it just irritating enough to keep office appointments short (Motluk, 2006). Intentionally wobbly furniture in this example equals *Schwierigkeit* in practice. A spin-off trend in this regard is that a “lifehacker” ethos has appeared whereby forums exist to exchange a variety of tips and techniques aimed to simplify and accentuate productivity in professional and private lives (Pash & Trapani, 2011). Another example: As a point of order at office meetings, to encourage participants to be brief in their speeches, compel them to stand while talking to the group, preferably holding a heavy object at the same time. In his philosophical musings on distraction, Young (2008) suggested that the opposite of a life plagued with disturbance would be one that is a truly liberating experience. The notion of *Schwierigkeit* would seek to align itself with this lofty goal. The end result is timely completion of the meeting as individuals cannot disturb flow (Csikszentmihalyi, 1990).

*Schwierigkeit* is also allied to the recently in vogue “Slow” movement, a global ideological theme challenging the dominant fashion for speed in many walks of life (Honoré, 2004). “Slow Food”, for instance, retaliated against the fast food industry (Jones et al, 2003). Even medical practitioners have championed a “slowness” renaissance as a strategy to reclaim time to think (Whit Curry, 2006). “Slow technology” was a design schema outlined to cultivate reflection and moments of mental rest rather than advocating obsessive adherence to efficiency in performance (Hallnäs & Redström, 2001). A vital factor in this design approach was the exploitation of slowness in learning, understanding and presence so as to suggest a haven-like interface for meditation that can be either physical or virtual. In part this could be attained through a possible emphasis on the aesthetics of functionality. Adopting this creative path, simplicity in the material components that make up an interface have a greater chance of being united with complexity of form.

Some present metrics of technology success may avoid the social ramifications of usage and tend to dwell on efficiency measures instead. To engage with this issue, a study dealing with a wearable computing device invented the concept of “social weight” to determine the attenuation of social interaction that a technological device causes between its user and others (Toney et al, 2003). Other psychologically motivated metrics have been advanced to assess the optimal usability of an interface, with cognitive viscosity being one of these attributes (Green, 1989). Viscosity is typically a highly tactile term, synonymous with “stickiness”. In a human-computer interaction context, it has been claimed that viscosity be used as a metaphor for gauging the capacity to alter an interface (Siddiqi and Roast, 1997). From this vantage, viscosity is taken to be an affordance within a user environment that supports resistance to local change. This inertia within the interface may seem to be a hindrance but it may have collateral benefits that are yet to be fully exploited, most likely through the lens of *Schwierigkeit* as viscosity is another way of thinking about difficulty.

## Concluding remarks

This short paper has outlined the essential nature of the continuing *Schwierigkeit* project. The notion of Antiusability is being considered within a broad human factors context. An evolving case study utilizing postgraduate-level student cohorts will be employed to further develop Antiusability and its contribution to efficient systems design. This provides a living platform in which to develop both the theory and design practice of *Schwierigkeit* in a progressive manner through class discussions that draw in contemporary examples of the paradigm. For instance, Dark Patterns are an emerging aspect of user interface design in which specifically crafted elements are built in to interaction protocols to intentionally misdirect and confuse (Brignull, 2011). Inspired by the psychology of motivation, these are design exemplars created to deceive the user so as to realize an ulterior purpose. For example, gaming machine interfaces may be deliberately designed to compel a player to spend longer searching for the low bet button - if it exists at all - in order to prolong extreme gambling behaviour. The same strategy would apply to the placement of a cash-out button that would terminate a gambling session, whereas betting buttons to continue play would be easier to find.

Dark Patterns are design examples of *Schwierigkeit* as they employ the logic of difficulty as a means to an end. Such an approach may evoke negative connotations due to the deception involved for reasons which may not always be for the greater good of the user. This is in direct contrast to the overtly positive social intentions of Thaler and Sunstein’s “nudge” design policies. An amusing example of this took place in 1999 with the etching of a picture of a fly onto male urinals in the toilets at Schiphol airport in Amsterdam (Lawton, 2013). The covert goal of this operation by airport authorities was to improve the aim of users. Toilet floors became far more tidy - and dry - and it eventually achieved an 80 per cent overall reduction in the cleaning bill. This “gamification” of urinals resulted in both hygiene and financial benefits and it was attained by adding difficulty. A principal goal of the *Schwierigkeit* project will be to seek out, assemble and categorize an encyclopaedic collection of user interface design examples that are representative of the concept. In monograph form, such a scholarly work could serve as a critical taxonomy of Antiusability to inform design praxis by functioning as a practical manual.

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