

# A SENSEMAKING APPROACH TO TABLET USERS' ACCOMMODATING PRACTICES

*Completed Research Paper*

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## **Abstract**

*As mobile devices permeate daily life, several studies investigate how users react when technology falls short of their expectations. In this paper, we deploy a data/frame model to examine sensemaking processes through which users approach their interaction with the tablet under conditions of discomfort. We show that users eventually handle such problematic episodes by adopting one of three identified practices: they choose to defer tasks until the situation changes or abandon the platform altogether; they develop workarounds at different levels of mastery; or they proceed by reframing their expectations for the mobile platform. The paper's contribution is twofold. Investigating user narratives on interaction, our study explicates the sensemaking processes through which users adopt one of the three practices. On a practical level, its results can inform IT artefact and application design by offering insight on how users proceed in bridging the gap between their expectations and the situation at hand.*

**Keywords:** Case study/studies, User behaviour, IT artefact, workaround, tablet, sensemaking, iPad

## **Introduction**

Literature on behaviour toward information systems that appear to fall short of user expectations is abundant. Several studies have explored user workarounds or acts of resistance, focusing on understanding how users adopt (e.g., Hirt and Swanson 1999), resist (e.g., Lapointe and Rivard 2005) or adapt (e.g., Beaudry and Pinsonneault 2005) to the implementation of new information systems. The common denominator across the majority of studies appears to be a focus on the organizational context. This is not unexpected considering that investments in information systems may be costly (Martinko et al. 1996), while user reluctance to adopt a newly introduced information system may pose a risk for the organization in question.

However, technology has become ubiquitous, significantly changing user habits and everyday life, and is no longer restricted within an organizational or work setting. Portable and mobile IT artefacts in particular are being used in ever diverse and changing contexts, and new computing genres, as for example the tablet, have been popularized, altering the landscape of daily IT use. In light of this, whilst there is a large body of literature on user adoption within numerous settings (e.g., Venkatesh et al. 2012), research on post adoption behaviour is more focused on the organisational/work context (e.g., Bhattacharjee and Premkumar 2004; Jaspersen et al. 2005), while studies examining personal use tend to emphasise more the role of habit in continuance intention (e.g., Limayem et al. 2007) or switching technologies (e.g., Chen and Potter 2011) and less user accommodating practices during problematic episodes.

In this paper, we argue for a shift of focus and examine interaction with technology holistically, without assuming specific roles for the individual or the information system (e.g., work-related). We posit that an investigation into the episodes that cause a disparity between one's expectations and the system's actual performance, how these are understood and ultimately handled, can offer a deeper insight into user accommodating practices. Therefore, following the interpretive case study approach, we trace user sensemaking and seek to detect the triggers, which initiate disillusionment, and to examine user practices under troublesome or uncertain conditions.

The paper is organized into six sections. First, we provide a brief overview of the literature on user behaviour and accommodating practices while working with or around technology. We then discuss sensemaking specifically in cases of problematic episodes and then present the theoretical framework, upon which our study builds. In the third section we detail our study's research approach. Next, we introduce our study's findings. The paper concludes by proposing directions for future research as well as discussing the study's contributions.

## **Working With and Around Technology**

IT artefacts such as tablets, are in fact complex platforms, and rely heavily upon an ecosystem, formed by developers, designers, users and the principles that bind them together. At the same time, computing devices are characterized by the existence or absence of features, which stem from designers' choices and whose understanding may not converge or even be in severe contrast with that of users' (Griffith 1999). As such, even though technological advances have profoundly made interaction with technology easier, interaction can be both supported and restricted (D'Adderio 2011; Orlikowski 2000).

Therefore, users often adopt the "path of least resistance" around the obstacles they are faced with when coming into contact with information systems (D'Adderio 2011). Such behaviour may range from modifying the information system to adapting one's own routines. In other instances, users seek to bypass a "designed-in behavior" (Koopman and Hoffman 2003) or develop harmless workarounds (e.g., (Ferneley and Sobreperez 2006) with the aim to smooth out their everyday interaction. For example, Huuskonen and Vakkari (2013) found that, due to design flaws and several external factors, users were resorting to small-scale cheats and shadow systems, so as to gain "a better grip on information and save time".

However, such obstacles may significantly impede interaction, and create stressful environments. Under such conditions, according to coping theory, individuals tend to appraise the encounter and evaluate whether it poses some threat for their well-being (primary appraisal) and whether they can do something so as "to overcome, prevent harm or restore [a] troubled person-environment relationship" (secondary-

appraisal) (Nach and Lejeune 2010). Beaudry and Pinsonneault (2005), for example, have shown that, when users appraise IT events as threatening for their circumstances, they may choose to adopt a problem- or emotion-focused coping strategy, depending on the perceived control over the technology, the environment and themselves. In more detail, problem-focused coping refer to one's effort to change the situation by acting on the relationship with the environment as a whole, while emotion-focused coping refers to changing "the way the stressful relationship is attended to (...) or the relational meaning of what is happening" (Lazarus 1993). In other words, emotion-focused strategies may lead to avoidance and denial, while problem-focused may lead to workarounds.

Nevertheless, as far as workarounds are concerned, these are often approached as acts of resistance toward technology. For example, Boudreau and Robey (2005) have used reinvention practices as evidence of interference with the implementation of IT. Following critical discourse analysis, Alvarez (2008) approached efforts to adapt and reshape technology as acts of resistance against newly imposed constraints. Ferneley and Sobreperez (2006) examined workarounds as a subsequent phenomenon of resistance-related behaviour, yet they underlined that, while workarounds are certainly a deviation from the designed use, they are not necessarily evidence of negative resistance; instead, they argued that workarounds might be an expression of positive resistance against a poorly designed information system and classified them as harmless, hindrance and essential, depending on the nature and the resistance rationale from which they derive. Moreover, Azad and King (2011) illustrated that essential workarounds, which are stable and persistent over time, despite being characterised as rule-bending, may "be more than acts of resistance" and report that users may deploying such workarounds so as to complete day-to-day work-related activities, without aiming to resist to technology or any official rules. Similarly, Markus suggests that 'resistance' as a term is often overstretched and examined with a stronger focus on the observed behaviour, and a weaker on one's intention. She moreover discusses that resistance can only be described as such solely when there are conflicting objectives (Markus 1983). Therefore, acknowledging the relational nature of resistance and based on Azad's and King's findings, one could argue that, workarounds, whose purpose is to ameliorate the use of a given technology, cannot be considered as a pure resistance-resultant behaviour, but as evidence of one's effort to adopt or adapt to an information system.

## **Sensemaking During Problematic Episodes**

Brown and Newman (1985) argue that accessing user understanding offers insights to designers aspiring to create better information systems and technological products. Yet, the opportunity to read into user understanding arises most often when one faces the violation of her/his initial expectations, as it triggers sensemaking (Griffith 1999). In other words, it is sensemaking that can help us appreciate users accommodating practices, and interpret the way users adapt their interaction to what is imposed by the information system and grasp the workarounds they develop or the reasons for which they may abandon a given technology altogether.

Making sense, or sensemaking, is the process through which people interpret occurrences or others' behaviours or seek to improve their understanding during unpredicted events (Klein et al. 2007). It entails the transfiguration of the overall situation into something that can be explicitly understood and in such a way that one can adopt a course of action (Weick et al. 2005). Specifically, it is triggered by recognising that the available information is either insufficient or inconsistent, and it is thus "a response to a situational surprise and a failure of expectations" (Malakis and Kontogiannis 2013). In this sense, sensemaking may be considered as bridging the gap "between order and chaos, structure and individual" (Dervin 2003).

Several studies to date have built upon sensemaking in order to examine how users experience a technology and the method based on which they choose a course of action. For example, Gopal and Prasad (2000) have highlighted that the features of group decision support systems (GDSS) may activate sensemaking and affect success or failure of a technology within a social structure. In the field of information visualization, Yi et al. (2008) have studied the way researchers work with data visualisation and unveiled four intertwined processes (overview provision, adjusting, pattern detection, matching mental model), which may be employed together towards generating insight. Similarly, Malakis and Kontogiannis (2013) have examined the decision making process of air traffic controllers, demonstrating that there is an iteration between frames and data, during which the controllers reach a decision by

continuously enriching their understanding, reviewing and exploiting the available information.

It should be noted that sensemaking can be thought as similar to the Critical Incident Technique (CIT), which investigates responses during critical situations (Flanagan 1954); at the same time, however, CIT is also quite different. Specifically, CIT considers incidents as being either positive or negative, depending on whether the chosen course of action eventually succeeded in solving the problem or whether it failed, causing additional problems (Serenko 2006). Since we focus on the trigger of disillusionment and the corresponding accommodating practice rather than on evaluating incidents depending on the effectiveness of the solution, sensemaking was considered to be a more appropriate approach.

### **The Data/Frame Theory of Sensemaking**

Our study builds upon the Data/Frame theory, which defines sensemaking as the process of fitting available information (data) into mental representations (frames), for the purpose of making sense of anomalies (framebreaker situations) (Klein et al. 2006; Klein et al. 2007). These frames denote the possible hypotheses linking the data, the latter being elements of the social environment or situation, which formulate the initial frame (Klein et al. 2006). As to the process itself, sensemaking is bidirectional, building upon several stages of understanding. In other words, sensemaking entails the construction - or deconstruction - of more than one frames, and the symbiosis of the frame with the data, since “[f]rames shape and define the relevant data, and data mandate that frames change” (Klein et al. 2006).

This iterative process may lead to two, equally possible, sensemaking cycles (Figure 1). The elaboration cycle includes the enrichment of the initial frame, by drawing information from the situation at hand so as to develop a refined understanding. The reframing cycle suggests revising one’s initial understanding by examining its fitness in relation to available data (Klein et al. 2006). Still however, it is possible that the sensemaker may find her/himself preserving a flawed or incomplete interpretation (Klein et al. 2007). These two cycles build upon six different, non-sequential, functions, nesting within the sensemaking process: elaborating the frame, questioning the frame, preserving the frame, comparing frames, seeking a frame, and reframing (Table 1).

Adopting the Data/Frame theory allows us not only to explore accommodating practices of tablet users and the cognitive processes they go through during anomalies, but the anomalous episodes themselves which trigger sensemaking. These triggers may include a discrepancy between one’s expectations and the outcomes of the interaction, the interaction itself, inability to complete a certain task, among others. Therefore, the benefit of the Data/Frame theory is that it formally accounts for anomaly detection (questioning the frame), for user response to anomalies (comparing the frame, seeking a frame) and for the possible consequences (reframing, elaborating the frame, preserving the frame), and can be a useful tool towards highlighting user accommodating practices as resulting from the sensemaking process (Malakis and Kontogiannis 2013).

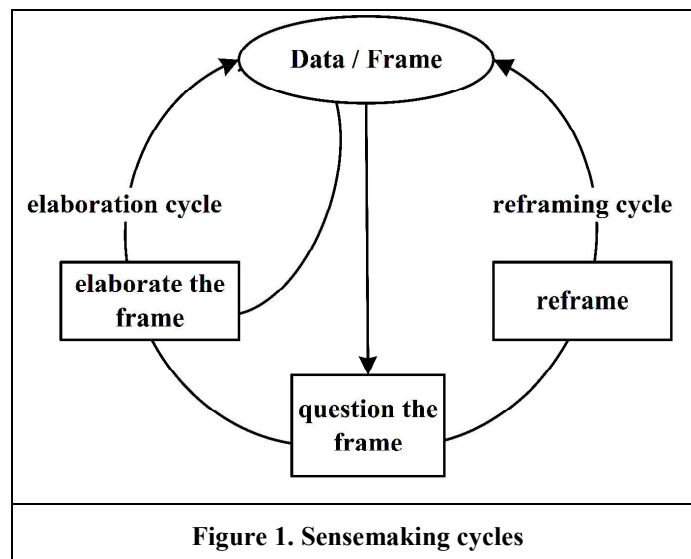


Figure 1. Sensemaking cycles

**Table 1. Functions of sensemaking (Klein et al. 2007)**

<b>Function</b>	<b>Description</b>
Elaborating	Evidence and information are collected from within the information. These need to be compared and fitted so that their adequacy is determined and inferences are generated.
Questioning	The individual detects the anomaly in the data, i.e., the data do not match the frame.
Preserving	The frame is preserved even though the data contradict it. The individual seeks to explain the data and may dismiss or reduce the importance of alternative frames.
Comparing	Gathering information for an alternative frame and assessing alternative strategies.
Seeking	Selection of a relevant frame for developing an explanation for the data. Typically one or two key data elements are used for the construction of the initial frame.
Reframing	One may discard irrelevant data, or see the importance of previously ignored ones. Thus, (s)he may reinterpret the data or even revise her/his expectations.

## Research Approach

Since our objective is to understand how the user makes sense of frame-breaking situations and proceeds towards tackling them, we approach interaction with technology as subjective and we consider knowledge of reality as socially constructed. Therefore our study's nature is qualitative and follows the interpretive tradition, using philosophical hermeneutics as its underlying philosophy (Gadamer 1976). This allows us to adopt the user's perspective, to access multiple interpretations of the examined concepts and profit from a deeper understanding of user accommodating practices (Orlikowski and Baroudi 1991; Walsham 1995). It also permits us to approach the empirical material's intended meaning through a continuous dialogue, without discarding our own preconceptions, but rather using them as a point of reference so as to reach an improved understanding (Boland Jr 1997).

Aiming to examine tablet user sensemaking and accommodating practices, our research builds on the interpretive case study research method, using episodes of disillusionment as the unit of analysis. Specifically, it is designed around a paradigmatic case, that of the iPad, because it is considered the exemplar of its genre; the tablet, previously classified as a niche market (Ozok et al. 2008), has only recently, with the launch of the iPad, become popular among everyday users.

### *Empirical Material*

While designing our study, it came to our attention that numerous users were documenting in their personal blogs their experience with the tablet. Within them, the bloggers were offering narratives of their everyday life and detailed accounts on the accommodating practices, which they deployed successfully, aiming to improve their personal experience with the tablet or integrate it effectively in their everyday life.

Research has shown that unsolicited, personal blogs generally communicate individual opinions and can be used for documenting one's life or for expressing "deeply felt emotions" (Nardi et al. 2004). Indeed, several bloggers highlight that, one of the reasons for blogging about their user experience, was specifically their intention to share their perspective:

*Albert: Six months into using an iPad, and a couple years for the iPhone, I wanted to share how these devices have impacted my ministry and life. Just as I benefit from the ideas of others in these areas, perhaps these ideas will prove helpful to you. (B8, Q1)<sup>1</sup>*

Moreover, it has been argued that blogs hold several advantages when compared to other empirical material. Hookway approaches them as the online counterpart of diaries and maintains that they manage to "captur[e] situated action unadulterated by the scrutiny of a researcher", while the "tight union between

<sup>1</sup> Quotes are marked with Bn, where n stands for the blogpost's number, so as to distinguish between the multiple blogposts by the same blogger, and Qm, where m stands for the quote's order of appearance within the blogpost.

everyday experience and the record of that experience” makes them less vulnerable to the retrospective reconstruction that may occur during an interview (Hookway 2008b). Therefore, approaching blogs as online diaries and an established mean “for understanding social actors both as observers and informants of social life” (Hookway 2008a), we consider them to be gateways one’s experience with the tablet, as lived and felt. As a result, they constitute appropriate empirical material for our study.

### ***Data Collection and Analysis***

The pool of blogposts was generated through a web search between March 2011 and August 2012, using ‘experience’ AND ‘iPad’ AND ‘blog’ as the keywords. In order to ensure that our empirical material included solely unsolicited, personal blogposts, we excluded all technical reviews, blogs and websites that could be thought of being affiliated directly or indirectly with Apple Inc. This resulted in a final pool of 49 blogposts, authored by 37 unique bloggers.

We begun our analysis by determining episodes of disillusionment and pinpointing the functions proposed by the Data/Frame theory of sensemaking (Table 1). During the first phase, we began with the open coding of all blogposts using NVivo 8, studying the material line-by-line and identifying framebreaker episodes, i.e., triggers of sensemaking. Next, we open coded sensemaking functions, which was followed by grouping these codes together (selective coding) according to the identified triggers. This helped us to delineate user interpretations and to proceed with more detailed examination of the empirical material; quotes were further coded, highlighting user accommodation practices during and beyond episodes of disillusionment and their respective outcomes. Evidently, in several occasions, user accounts involved several themes, which resulted in accounts being coded across multiple categories, while oftentimes, there were themes that could not be coded within extant codes; these were placed into newly created ones. The coding procedure entailed several iterations, and followed the hermeneutic circle methodology (Boland Jr 1997; Gadamer 1976). This permitted the constant re-evaluation of our interpretations within each case and across cases, and against the literature, thus refining first- and second-order constructions, and allowing the emergence of reoccurring patterns. The first author open coded the data, while selective coding was conducted via consultation among all authors. At the end of the coding procedure, we developed the study’s chains of evidence by grouping together representative quotes, highlighting sensemaking functions (Table 2, Table 3) and illustrating accommodating practices corresponding to the various problematic episodes (Table 4).

### ***Delineating the Functions of Sensemaking***

In this section we present a detailed account of the functions of sensemaking, aiming to illustrate the circumstances that activate them. This allows us to exhibit the dynamic character of the sensemaking process during occasions of disillusionment, to identify the different patterns of behaviour depending on the episode at hand and to recognise the impact of such episodes on the overall experience with the IT artefact. References to the bloggers’ recounting can be found in Table 2 and Table 3.

#### ***Questioning the Frame: detecting episodes of disillusionment***

While interacting with the tablet, several users appear to be disappointed to some extent with the tablet’s capabilities and the possibilities offered. In their blogs, they document how they came across these episodes of disillusionment, while reporting on what they originally anticipated.

Most frequent among their expectations was an unobtrusive internet experience. This was not unexpected since, as Pete recalls, the tablet was specifically marketed as offering a superior browsing experience. While remembering the tablet’s official launch, he sees the lack of Flash support as something obviously hindering his (B29, Q1). Phillip, on the other hand, acquired the tablet aiming specifically to use it as a reference manager, organising his PDF and PPT files in a directory structure. Realising that the particular tablet could not meet his expectations functioned as the starting point toward collapsing the initial frame and as a trigger towards seeking viable solutions, meeting his needs (B17, Q1). Similarly, Garland, who was looking forward to using the tablet for reading purposes while in bed, saw his expectations torn down as the new IT artefact’s form factor felt uncomfortable, and even precarious for use in the particular setting

(B11, Q1). Following a similar line of thought, Jacques realized that the tablet is missing important features, namely ports and slots that would allow him to connect on it external storage media (B23, Q3). Even though it is uncertain whether he expected this obstacle, it is clear that upon facing it, he embarked towards resolving it with the help of a technology enabler. It is worth noting that both Garland and Jacques highlight what they perceive as an inconsistency between the device's overall attractiveness, i.e., "premium materials" (B11, Q1), "beautifully designed device" (B23, Q3), and form-related perceptions.

### ***Comparing Frames: alternative solutions***

Following the moment of disillusionment, users proceed by adopting different practices. While some may seek ways to refine their understanding, others may attempt to justify in some way the inconsistency between their expectations and what actually happens. Yet, by and large, the most widely chosen path, as inferred from our empirical material, was that of developing comparisons between the extant situation and possible alternative approaches (Figure 2c, Figure 2e).

When Hawk realized that heavy blogging solely from the tablet – a typing-intensive task – was rather unrealistic, he did consider that, had he used a keyboard, perhaps he would have been more efficient (B9, Q1). Emory, like Hawk, sought to compare alternative approaches for blogging. He compares blogging from the tablet using the dedicated mobile application or the internet browser to blogging directly from his laptop, and suggests that none of these alternatives seems viable as they don't help him match his typical blogging pace (B42, Q1). Ed, who purchased the tablet for occupying his time while recovering from surgery, feels constant discomfort due to its form factor and screen glare. Seeking to explain his situation, he reflects on the differences between the newly acquired tablet and his other devices, highlighting various disadvantages (B4, Q2-3).

### ***Preserving a Frame: defending flawed interpretations***

While comparing different approaches, users have the opportunity to identify and later adopt the one offering a more desirable outcome (e.g., ease their interaction); yet, results show that they can equally dismiss this process and proceed by justifying their primary choice, i.e., preserving the frame (Figure 2c). Tracing Phillip's sensemaking, we see that he aimed at using the tablet as a PDF and PPT file organiser (B17, Q1). He highlights that, admittedly, one can download such files via the internet for later viewing, which assumes however that there is an always available connection. He further stresses that, since his device is not 3G-enabled, as a solution is not always at his disposal. As a result, he finds himself struggling to transfer files, and in doing so, he examines the scenario of having purchased the 3G-enabled, instead of the WiFi-only one, while he also considers the option of acquiring a personal hotspot, which would allow him to be always connected (B18, Q2). In short, while he realises the inconsistency of the initial frame, with the tablet failing his expectations, he goes on comparing alternative frames, i.e., different scenarios with the help of technology enablers, and he finally preserves the initial frame, by introducing the advantages of financial savings.

All the while, others preserve their flawed interpretation, without examining alternative strategies or approaches to the anomalous situation. In other words, they proceed directly in diminishing the significance of what triggers their disillusionment or justifying it altogether (Figure 2b). One exemplary case is that of Maddy, who feels disappointed at first due to the tablet's inability to allow multitasking (B48, Q1). As other users, e.g., (B11, Q2), (B36, Q1), she, too, notices that she can only use only one application at a time. However, she minimises multitasking's importance within the context of her interaction and supports the initial frame, by suggesting that the issue may be the result of the tablet's immaturity. Ben exhibits a similar rationale when reading into his internet browsing. For him, the problematic episode evolves around the lack of Flash support and website compatibility. However, he doesn't seek an alternative explanation by means of comparison among different browsing strategies; instead, he too adopts the first available frame and attributes the disillusionment to the tablet's immaturity (B31-Q1).

### ***Elaborating the Frame: enriching the interpretation***

Several users seek to collect information towards improving their understanding on the particularities of the situation, so that they can eventually adopt a suitable course of action (Figure 2a). Jacques, for

example, examines the possibilities for connectivity and their impact on his interaction, which equips him to develop a more elaborate knowledge of the issue (B23-Q3). Nevertheless, as shown in Maddy's case, one may preserve an imperfect frame and further elaborate it (Figure 2b); while she perceives a discomfort from the lack of multitasking, she minimises the episode's impact by suggesting that the operating system's responsiveness may compensate for it (B48-Q1).

Finally, others enrich their understanding following a different path. Garland (B11, Q4), for example, having gone through the function of comparing his interaction across different platforms, developed several alternative frames. However, he preserves an imperfect one and goes on attributing his initial frustration to his style of interaction (Figure 2c).

Table 2. Chains of Evidence – Sensemaking Functions in the Elaboration Cycle		
Process	Trigger	Quotes
(a)	Connectivity	B23: Gripe number 2 is the lack of a USB port and/or an SD card slot. I bought Apple's Camera Connection Kit for iPad but it seems a little strange for such a beautifully designed device to rely on what is essentially a dongle in order to connect to a camera or to flash media. With no power available from the iPad's dock-USB connector, few (if any) peripherals can be used with the iPad – even if there was software available to exploit them. For example, there are times when it would be good to hook up a webcam, and my main camera uses CF cards so, without a working card reader, there is no choice but to (slowly) download images from the camera over a USB cable, draining the camera's batteries in the process. (Q3)
	Application Translation	B49: I use an excellent app called Blogsy, which I prefer to the official WordPress app for iOS. (I'd be even happier if I could just use full-blown WordPress in Safari, but it doesn't quite work.) (Q3)
(b)	Flash support	B31: It is comfortable to use and for emailing and web surfing there is no equal. Some web sites have not been fully optimised for the iPad – I am not just talking about the absence of Flash which, admittedly, can be annoying at times – but as time progresses this will improve (this, after all is still version 1). (Q1) B25: I've run up against the inability to view Flash and Silverlight streaming content about once every other day. It's annoying, but not a deal breaker for me. (Q1)
	Multitasking	B48: You can only work on one thing at a time – I'm guessing that's a first generation thing. So there's a lot of flipping back and forth but things open exactly where you left off and they open quickly. (Q1)
(c)	Form Factor	B11: The downside to those premium materials is that there's a fair amount of heft to cope with. The first night I took the iPad to bed – for some Amazon Kindle app reading, after all it was only our first date – I soon gave up trying to hold up the tablet and reached for my Kindle instead; in contrast the dedicated ereader felt far more manageable, though also much less solid. I was also a little afraid of dosing off and having the iPad drop on my face and break my nose. (Q1) B4: The first day I had it, I rented a movie I have always loved, Blade Runner, and tried to watch it for over an hour before simply giving-up. I struggled to get in the right position where I could see it perfectly without glare and get in position where I did not have to hold the surprisingly heavy thing up in the air in the perfect position. After carefully piling up pillows on my lap, and adjusting them, I got it just right, until I got up to go to the bathroom, and readjustment took another 5 minutes. (Q2) B4: The Kindle is so much lighter, comfortable for me to hold in any position, especially holding it in the air for long periods in various positions (as I have been doing) as I read it in bed or sitting. In contrast not only does the weight of the iPad make it uncomfortable to read for even short periods in many different



		the same positions where a book or Kindle would work well, getting it positioned just right to avoid the glare adds a second variable to the struggle (a problem the Kindle's non-glare screen largely avoids, even though it lacks the beauty of the iPad screen). (Q3)
	Connectivity	B19: I got my iPad the day they came out, and it was the wifi version. (..) So I ended up getting the mifi through verizon. I'm paying more than I would if I had a 3G iPad (...). I can use the mifi with all of my computers, so it was worth it but it is something that has given me pause. (Q2) B18: I don't think I am missing out yet having bought the non-3G version. Certainly I wouldn't have had to work so hard to fill my device up with documents if I had an always-on connection. But with the wi-fi only version I am not worried about paying more each month for the data downloads, and I do worry that I would end up using that a lot. I am actually considering getting a portable hotspot device (...) and that way my wife and I can both share the connection when we are traveling. We don't work in the same office, but if one of us needed it the other can give it up for the day. I think that would be a better solution, at least for my situation. (Q2)
	Directory Structure	B17: As I think about what the first things that came to my mind when using the iPad the most common thought was "how the heck do you store a PDF file on it to view later?" That was one of my biggest initial frustrations with the iPad (knowing what I hoped to do with it initially). (...) The second frustration was the lack of a directory structure. I bought Keynote so that I could place ppt slides on the iPad. (...) But in Keynote all the files show up in one spot. (...) My first attempt to solve these issues was to use Evernote. (...) But it doesn't meet my needs either. (...) 3 days after I bought the iPad I noticed that one of the top paid apps (...) was called GoodReader. (...) I thought it might meet my needs. And it does! (Q1)
	File formats	B5: I, uhm, acquired a bunch of movie classics (...). Use Permute to convert your existing movie files to the iPad format or buy your movies straight from iTunes. (...) To be honest, I did illegally download a bunch of movies. But, in my defense, these were all movies I already owned on DVD. The problem is that ripping a DVD you legally owned and then converting it just takes hours or days. (Q1)
	Flash support	B29: (...) what he said about the iPad during it's launch back in January must always be taken with a pinch of salt (best ever web browsing experience? Without Flash? Pfft), but one thing he said does ring true; it is like holding the web in the palm of your hands. (Q1)
	Multitasking	B11: I don't think I'm asking too much for wanting to browse the web while having Twitter and Spotify running in the background, something I can happily do on Android. (Q2) B11: It probably sounds like I've been terribly disappointed with my iPad experience, but in fact I'm gradually finding more and more ways to integrate it into my life. The mistake, perhaps, was in immediately trying to find how I could directly replace my usual workday tools with the new tablet. The sort of multitasking I do as a matter of course while blogging – flipping from browser to twitter to RSS to IM and more – isn't the best style of interacting with the iPad, and while you can certainly use it to prepare articles I'm still quicker on the MBP. (Q4)

**Seeking a Frame: finding anchors**

As users attempt to understand the anomalous episodes, they seek the reasons of their disillusionment, and which function as the anchors for the construction of the new frame (Figure 2e). As in Phillip's case (B17, Q1), the lack of a universal file structure functions as the trigger of several users' sensemaking. However each of them follows a different path of making sense of their experience; while they have

different points of departure, they anchor their understanding on different points.

Bobby for example approaches the tablet as an IT artefact of great potential and builds his initial frame around this concept. Nevertheless he quickly feels disappointed as the lack of a directory structure proves to be troublesome because it doesn't allow the implementation of applications as envisaged by their developers. He considers this to be a limitation imposed by the company's overall business strategy (B21, Q2). In short, while his sensemaking is triggered by the lack of file structure, the main source, i.e., the anchor for his interpretation of the situation is found in business-related aspects. On the other hand, Hawk's initial frame is constructed around his motivation to use the tablet as a substitute for his laptop for his blogging activities. Yet, he perceives it as inadequate for his needs and anchors the newly constructed frame in the inability to manipulate effectively picture management tasks, directly or indirectly with the help of third-party applications (B9, Q3).

**Table 3. Chains of Evidence – Sensemaking Functions in the Reframing Cycle**

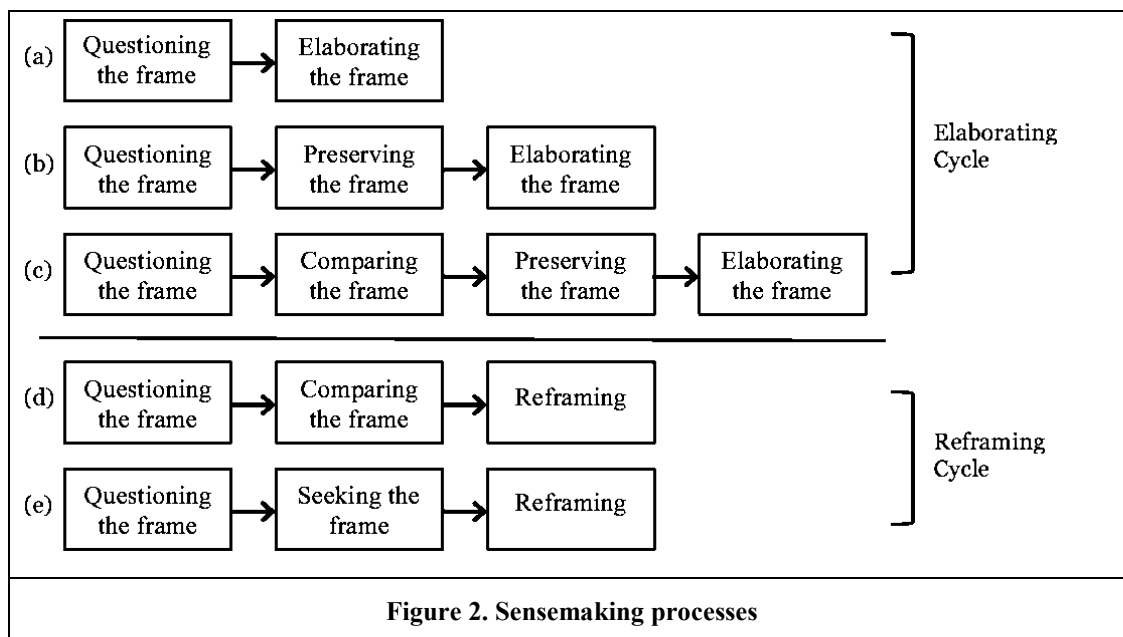
Process	Trigger	Quotes
(d)	Flash Support	B10: The biggest thing I realized from going iPad only is that it's a total waste of time to lug around the Macbook on days where I am doing a ton of commuting or have a lot of meetings. By and large, I was able to keep up with email, Facebook, the news, and deal with Google Docs and light spreadsheets / presentations on the iPad alone. When I was going iPad only, I basically just deferred any long emails until I got home (which was generally okay) and deferred playing Flash-based Facebook games until I had a Flash-capable device. (Q1)
	New cognitive ergonomics	B33: I often forget and press the home button, not the open-windows icon, while in Safari. (Home works in webOS to see multiple open browser windows). (...) I'll readily admit that some of this may just be a case of retraining my finger memory from Palm Pre's gestures, which feel intuitive after a year and a half, to the iPad's, which are still new to me. (Q1)
	Multitasking	B49: When you use a Windows PC—and, to a somewhat lesser extent, a Mac—you get dragged down by the responsibilities and obligations of using a computer. (...) With the iPad, all that goes away. You can devote nearly every second of your time to the task at hand, rather than babysitting a balky computer. (Q4)
	Typing-intensive tasks	- See also B10, Q1 above. B10: There was one very unexpected surprise. The iPad is a much more capable all-day computer than my Macbook. I generally can't get more than 2-3 hours of useful stuff done on my Macbook on a single charge. On the flipside, my iPad is able to last an entire day on a single charge with nearly constant use. (...) At least 2-3 days per week I have a combination of commute and meetings that basically make the laptop useless. When I'm on the go, I rarely get the opportunity to sit down, plug in, and get enough work done to justify lugging around the laptop. (Q2) B42: I have installed the WordPress app for the iPad, but I still tend to write these posts on the laptop. The reason for that is that the rich-text interface for WordPress is not available in the app, and does not appear to work in the version of Safari that runs on the iPad. Now, I know plenty of HTML, but having to write the HTML myself slows me down and I really don't have the time to slow down in order to keep up with the blog posts. So while I have written one or two posts directly on the iPad, most of them are still written on the laptop. (Q1) B49: Without the ZaggFolio, I used the iPad mostly for reading and light productivity. I'd happily type brief e-mails on it, but never anything as long as a meaty blog post or article. But Zagg's no-compromise keyboard made typing every bit as comfy as it is on a notebook. All of a sudden I could write hundreds of words on the iPad. Or thousands of them. (Q2)

(e)	Directory Structure	<p>B9: The other major reason that blogging on the iPad is hard is because of picture resizing and uploading. Nevermind that there isn't a camera, there isn't a file system to download pictures off the Internet that could be used to resize. Also, while there are a few image apps out there for the iPad, none that I've tried work all that well, and again, without a file system, getting pictures uploaded to Wordpress is impossible (as far as I can tell). (Q3)</p> <p>B21: DropBox: A life-saver and a great replacement for the lack of universal file storage on the iOS platform. (Q1)</p> <p>B21: But one of the biggest problems with iPad that is preventing it from showing its great potential is the software limitations imposed by the fundamental design and business strategies. This has limited the opportunities for implementing very good ideas on iPad tablets. For example, the lack of a universal file storage system doesn't let developers implement many good features in their applications. (Q2)</p>
	Typing-intensive tasks	<p>B9: I took notes at the DC conference on the iPad, which turned into three posts. However (...) all these posts came at best hours after the sessions because I didn't actually post any of these stories to WordPress using the iPad. There are a few reason why (at present) trying to blog from the iPad isn't a good idea. First of all, even though I've had my iPad for a number of weeks, I still haven't reached what I would consider an acceptable typing speed using the on-screen keyboard. (...) Of course, perhaps if I had purchased a keyboard, a lot of my typing woes may have decreased, although I imagine that autocorrect would still be a pain. (...). However, I'd be lying if I said that I'm not going to take a closer look at the pros and cons of getting a keyboard soon. (...) So to make a long story short, I gave up and borrowed laptops (one per continent) to do all of my posts (Q1)</p>
	File formats	<p>B18: (...) I did hope that the iPad would show my work well. It does, but since I primarily shoot in RAW format I have to convert everything to jpg files for the ipad to display them. (Q1)</p>
	Application Translation	<p>B49: When I started using the iPad as my primary device (...) I thought that Photoshop would be simply irreplaceable. Then I discovered that I could do about 85% of the things I do with Photoshop by using several iPad apps together as an ad-hoc graphics suite, including PhotoForge2, TouchDraw, and others. Photoshop remains the more powerful tool, and on the iPad, I only have access to the fonts that Apple provides. But I can apply fancy effects, layer together multiple images into a collage, and dress up type on the iPad. (Wait, how can you match the precision of a mouse and the efficiency of a big-screen display with the iPad's touch interface and dinky screen? Well...you can't. But for most of my day-to-day needs I can come closer than I would have expected before I gave it a shot.) (Q9)</p>
	Flash support	<p>B23: I know Flash is a nuisance, and I would love to see a web of standards-compliant sites using HTML5 to deliver dynamic content, but I also live in the real world, and when sites like the BBC's weather page don't work properly on the iPad, it's a bloody nuisance. (Q2)</p>
	New cognitive ergonomics	<p>B40: (...) my muscle memory has me reaching for a mouse again and again. I imagine that once I've written on the iPad enough, I'll get used to touching the screen instead of reaching for the mouse. (Q2)</p>
	Multitasking	<p>B36: The one thing I thought would be a negative in the beginning, turned out to be a positive. I'm referring to the iPad's lack of ability to multi-task. When you're doing email, you're doing email full screen. You have to go back to the home screen, and touch another icon to switch to a different program or application. (...) Once you get used it that, you realize how efficient you are with the lack of distraction. (Q1)</p>

### Reframing: reinterpreting the frame

Reframing, i.e., the reinterpretation of a problematic episode due – or thanks – to newly perceived data, may result by juxtaposing alternative frames. While the sensemaker considers alternative interpretations of the anomaly, (s)he also reflects on the possible approaches towards overcoming it. Therefore, (s)he may ultimately identify new information which may now be more important within the context of the interaction and thus alter pre-established perceptions and goals (Figure 2d).

Drawing from Gordon's recounting, we see that what triggers his sensemaking are the lack of Flash support and that of a physical keyboard, the first inhibiting his gaming activities and the second typing-intensive tasks (B10, Q1). However, he examines his tablet interaction within the particularities of his everyday life – which includes increased community and frequent meetings – and compares it with that with the laptop (B10, Q2). This process leads him into reflecting on the tablet's increased portability and battery efficiency, re-evaluating his priorities and lessening the importance of a typing-intensive and Flash-based tasks, and ultimately being comfortable with deferring them (B10-Q1-2). Nevertheless, reframing may also occur as users seek to anchor their understanding on the causes of their disillusionment (Figure 2c). As Leo endeavours to use the tablet as a picture-editing tool, he finds himself disappointed because the application of his choice doesn't translate well on the specific platform, offering limited features. This initialises his sensemaking and, while seeking to enrich his initial frame by highlighting the application's disadvantages, he anchors his interpretation on the tablet's primary role, as imposed by its overall design, and his original stance towards its competencies. However, through this process, he eventually repositions his approach and suggests that the tablet's reduced performance may still be considered satisfactory along the lines of his everyday needs (B49-Q9).



### Episodes of Disillusionment and User Accommodating Practices

Aiming to identify patterns of user practices in relation to sensemaking triggers, we conducted an across-case analysis. We also conducted a within-case analysis so as to examine whether differences in the sensemaking processes entailed the adoption of specific practices. These results are summarized in Table 4 and the three main clusters that emerged are 'Rejecting', 'Workarounds' and 'Repositioning'. It should be noted that the concept of 'workarounds' is quite different from Gasser's 'working around' (Gasser 1986). Gasser's 'working around' embraces both workarounds and working around technology, the latter potentially suggesting bypassing the technology altogether. However, these two behaviours are conceptually and practically different (Markus 1983); entirely avoiding a technology is often approached as resistance-related behaviour and in many cases it entails no effort to work with or integrate a given technology in everyday routine, while workarounds may be the result of one's endeavour to seek a solution

towards successfully adopting or adapting the technology (Azad and King 2011).

### ***Rejecting the Tablet***

The practice of rejecting the tablet may be thought as one's resistance to adopt the device for particular tasks, and it may range from deferring these tasks to abandoning the IT artefact altogether. In more detail, an important pattern that emerged within this cluster is that of users abandoning the tablet for watching movies and videos (e.g., B4, Q2), for bedtime reading (e.g., B11, Q1) and for typing-intensive tasks (e.g., B9, Q1, B42, Q1). As far as watching movies and reading are concerned, disillusionment originates from the tablet's form factor with users choosing to substitute the IT artefact. Interestingly enough, this choice derives from a comparison between a previously owned device, e.g., dedicated e-reader, and the newly acquired one. In essence, having already a positive experience with another device minimises users' willingness to adjust to a new anthropometry and they thus preserve the initial frame of the tablet being an uncomfortable, ergonomically-wise, artefact.

Findings on prolonged typing vary. Even though a comparison of alternative frames may lead to the tablet's rejection (e.g., B42, Q1), it may equally lead to task postponement (e.g., B10, Q1-Q2). Emory, for example, considers the alternative solutions at his disposal and argues that they can be time-consuming; as such, his goal shifts, from using the tablet for blogging to maintaining his blog-posting pace and thus abandons the tablet for this task (B42, Q1). Following the same sensemaking process, Gordon highlights the importance of the tablet's increased portability and re-evaluates his goals; yet, in this case, instead of abandoning the tablet, he chooses to defer the task itself (B10, Q1-Q2). Finally, rejecting the tablet for typing-intensive tasks may also be the result of a saturated understanding of the tablet's performance and capabilities and which can be captured through Hawk's case (B9-Q1). He recounts his effort to use the tablet for intense typing, the issues he faced, and how he ultimately resorted in replacing the device with borrowed laptops for his blogging activities. Therefore, similarly to Emory and in contrast to Gordon, Hawk sees a greater value in completing tasks on time and efficiently rather than in increased portability.

Understandably, these user practices differ immensely regarding user intentions, and they all stem from the interaction's re-evaluation within the context of use. Considering them as a whole, one sees that users prefer to postpone less important activities, such as flash-based games and less significant e-mails (B10, Q1-Q2). In contrast, when the activity is considered to be important, for example, being work-centred (B9, Q1) or remaining faithful to one's readership (B42, Q1), users consider using other devices as more advantageous.

### ***Developing workarounds***

The second cluster of user practices is that of workarounds. When users break free from a flawed or fragmented interpretation (Figure 2a, c, d, e), they succeed in resolving the problem they face, by deploying elegant or complex workarounds. In more detail, the nature and the complexity of the workaround is mainly dictated by the issue and the available solutions, provided that the user acknowledges that the situation can be improved through her/his mediation.

By and large the most popular type of workaround among users was the use of third-party, offline or cloud-based, applications. Our analysis shows that the lack of a directory structure, e.g., (B21, Q1-Q2), (B17, Q1), and the inefficient translation of applications for the specific platform, e.g., (B49, Q3), (B49, Q9), lead users to research the extant application marketplace. Nevertheless, a clear pattern, linking the solution's sophistication, the user type and the sensemaking process did not surface. For example, users may go through the process of revising their understanding and expectations (Figure 2e) and adopt a complex workaround, entailing the use of a bundle of applications (e.g., B49-Q9), and which may be seen as a 'kludge' (Koopman and Hoffman 2003). Others, while refining their frame through an investigation into the tablet's capabilities (Figure 2a), appear deploying a rather straightforward workaround, i.e., use a substitute application (e.g., B49, Q3). As a result, provided that one manages to recognise that (s)he can improve the interaction, the sophistication of the workaround may be approached as problem-dependent rather than solely sensemaking-dependent.

Moving from software- to hardware-based workarounds, users turn to technology enablers in order to overcome connectivity issues and handle typing-intensive tasks. Connectivity issues are most often treated

with the help of enablers, such as hotspot devices (e.g., B19, Q2) and card readers (e.g., B23, Q4), which enable the tablet's cooperation with networks and other devices. On the other end, heavy typing is approached with the help of a wireless keyboard (e.g., B49, Q2). What is notable is that users tackle typing-intensive tasks with the help of technology enabler, even though they follow the same sensemaking process with those rejecting the tablet for such tasks (e.g., B42, Q1) or deferring them (e.g., B10, Q1). As we were not able to attribute this difference to the sensemaking process, we investigated further into user characteristics so as to shed light into the inconsistency.

Gordon prefers to defer typing-intensive tasks for the sake of increased portability (B10-Q1), while Emory chooses to abandon the tablet and continue using his regular computer so as to maintain his blogposting pace (B42-Q1). The main difference between these two is that the first is a mobile professional while the second, even though a frequent traveller, conducts a more stationary professional life. Nevertheless, Leo, who is a on-the-go professional, like Gordon, adopted an approach similar to Emory's. Further scrutinising his recounting, we see that for Leo is more difficult to defer tasks since his typical workdays take place almost always outside the office [*Even when I'm not traveling, I spend a lot of time bopping around San Francisco and the Bay Area, attending conferences, visiting tech companies, working out of hotel lobbies*] (B49, Q5)] and possibly he has less time for revisiting responsibilities, much like Emory. Furthermore, Leo finds additional advantages in the tablet, even when augmented with an external keyboard [*Beyond the jaw-droppingly good battery life, my iPad 2 has one other hardware attribute that's a huge upgrade over the Air: It has AT&T wireless broadband built in. (...) I don't have to futz with Wi-Fi hotspots. I'm just online—and it makes me so much more productive that I don't object a bit to paying AT&T for the service.*] (B49, Q7)]. Therefore, revisiting our initial interpretation, we see that following the same sensemaking process (Figure 2d) and for the purposes of typing-intensive tasks, what leads users to adopt a specific accommodating practice rests with their perception regarding the tablet's overall performance; additional advantages, e.g., battery efficiency and portability, may exert a stronger influence and drive them to work harder toward resolving any emerging issues.

### ***Repositioning understanding***

The third cluster may be considered as the result of one's repositioning relative to the initial frame and the development of a new understanding (Figure 2c-e). The common denominator across these instances is that, independently of the sensemaking process, users adjust their understanding to the situation at hand, without seeking to improve the underlying conditions. As a result, they defend or minimise the importance of any inconsistencies between their expectations and the tablet's functionality.

Most prominent among the features that violate users expectations is the lack of multitasking, with users rationalizing it across all sensemaking processes. Those who persist on a flawed understanding imply that perhaps this feature is lacking due to the tablet's immaturity and hope that future versions may allow it, e.g., (B48, Q1). Others seek to examine further their interaction and, while reflecting on previous experiences, revise their interpretation and approach the lack of multitasking as something that assists them in being more focused on the task at hand, e.g., (B49, Q4), (B36, Q1). Equally so, others consider their interaction style as imperfect within the context of the newly introduced cognitive ergonomics, and posit that any inconsistencies are due to a mismatch between the two, e.g., (B11-Q4).

Finally, a subgroup within the cluster of repositioning emerged due to the lack of Flash support. Even though all users suggest that it inhibits their internet experience, they eventually rationalize it, each to different extent. Similarly to those who accredit some issues to the tablet's immaturity, they appear confident that this will be handled in the future, e.g., (B31, Q1). Yet, others shelter their understanding and, instead of seeking alternative interpretations, they claim that Flash is not integral, e.g., (B25, Q1). All the while, others shift liabilities and posit that the issue lies with websites using Flash rather than with the incompatibility between the software and the operating system, e.g., (B23, Q2).

### ***Interdependence of Accommodating Practices***

The within-case analysis revealed that, for specific disillusionment triggers, the adopted accommodating practices are not necessarily used independently from each other. A user may shift from one practice to another over time, or deploy more than one, depending on the task at hand.

As shown from Emory's accounts, he considered blogging from the tablet as a typing-intensive task due to the necessity of typing HTML himself; fearing of putting his blogging pace in jeopardy, he chose to abandon the tablet and continue on blogging from his computer (B42, Q1). However, he reveals that he is equipped with a bluetooth keyboard (i.e., a technology enabler), so as to catch up with his science-fiction writing when he finds himself outside his home office [*"In writing on my iPad, I don't use the touch screen, which would be far too slow for me. (...) I have a standard Mac wireless BlueTooth keyboard that I sync with my MacBook. When I am going to be away from the house and I know I'll be writing, I take that same keyboard with me."* (B44, Q2)]. In addition, he resorts to using a bundle of cloud-based third-party applications, because syncing with his home computer is a basic requirement [*"I had to experiment with different ways of writing fiction that would allow me to integrate with Scrivener, which is my primary writing tool on my Mac laptop. (...) Eventually, I found a better solution, using Scrivener, Dropbox, and Elements."* (B44, Q1)]. In other words, he uses two workarounds – a technology enabler and several third-party applications – so as to succeed in using the tablet as desired and at an acceptable pace; yet, previously, he had rejected the IT artefact altogether (B42, Q1).

On a more abstract level, such behaviour may be interpreted as repositioning one's understanding. In the example above, the user attempted to use the tablet for blogging; yet he realized that it would slow him down considerably, thus abandoned the tablet altogether for the specific use case, but not for all other purposes. Instead, by developing two workarounds (technology enabler and third-party applications), he succeeded in fitting the IT artefact in his everyday and work life, and in using it for other, similarly typing-intensive tasks. It can thus be argued that users embark using a mixture of the identified accommodating practices rather than resorting to just one, leading the user from an initial rejection to a final repositioning.

Table 4. User Accommodating Practices

Process	Rejecting		Workarounds		Repositioning	
	Trigger	User practice	Trigger	User practice	Trigger	User practice
(a)			<b>Connectivity</b>	Technology Enabler (B23, Q3)		
			<b>Application Translation</b>	Third-Party Application (B49, Q3)		
(b)					<b>Flash support</b>	Will improve (B31, Q1) Dismiss importance (B25, Q1)
					<b>Multitasking</b>	Will improve (B48, Q1)
(c)	<b>Form Factor</b>	Abandon tablet (B11, Q1), (B4, Q2), (B4, Q3)	<b>Connectivity</b>	Technology Enabler (B19, Q2)	<b>Connectivity</b>	Dismiss Importance (B18, Q2)
			<b>Directory Structure</b>	Third-Party Application (B17, Q1)		
			<b>File formats</b>	Alternative Routes (B5, Q1)	<b>Flash support</b>	Dismiss importance (B29, Q1)
					<b>Multitasking</b>	Taking the Blame (B11, Q2), (B11, Q4)

(d)	<b>Flash Support</b>	Push back activity (B10,Q1)	<b>Typing-intensive tasks</b>	Technology Enabler (B49, Q2), (B44, Q2)	<b>New cognitive ergonomics</b>	Taking the Blame (B33, Q1)
	<b>Typing-intensive tasks</b>	Push back activity (B10, Q1), (B10, Q2) Abandon tablet(B42,Q1)			<b>Multitasking</b>	Permits focusing (B49, Q4)
(e)	<b>Directory Structure</b>	Abandon tablet (B9, Q3)	<b>File formats</b>	Convert files (B18, Q1)	<b>Flash support</b>	Dismiss importance (B23, Q2)
	<b>Typing-intensive tasks</b>	Abandon tablet (B9, Q1)	<b>Application Translation</b>	Third-Party Application (B49, Q9)	<b>New cognitive ergonomics</b>	Taking the Blame (B40, Q2)
			<b>Directory Structure</b>	Third-Party Application (B21, Q1), (B21, Q2), (B44, Q1)	<b>Multitasking</b>	Permits focusing (B36, Q1)

## Conclusions

Technological advances have enabled the development of sophisticated information systems, which fulfil most user requirements (Tractinsky 2004). However, they are far from perfect, often hindering task completion and failing user expectations. Focusing on these episodes of disillusionment, in our study we have examined user sensemaking in order to shed light into various accommodating practices. As illustrated, and in line with the Data/Frame theory (Klein et al. 2006), the five identified sensemaking processes can be divided into those leading to elaborating and those leading to reframing one's initial understanding (Figure 2). In other words, upon identifying the discrepancy between expectations and actuality, users begin making sense of what takes place, following different processes, and they either a) revise their goals, or b) elaborate further their understanding, occasionally persisting on a flawed interpretation or discarding alternative choices. All the while, our findings show that the very process of sensemaking leads users into investigating alternative solutions, assessing the value in adapting the tablet to their needs or adapting themselves to the tablet's capabilities.

Users may proceed developing workarounds by turning to technology enablers and third-party applications in order to successfully integrate the tablet into their routine. Such workarounds appear to be persistent over time, without explicitly breaking the principles of the interaction. In contrast, they are perceived as essential workarounds (Azad and King 2011), facilitating interaction and increasing productivity. Moreover, they defer significantly from direct/indirect or positive/negative resistance (Ferney and Sobreperez 2006). On the one hand, users exhibit that their intention is to incorporate the tablet in their everyday; therefore, developing workarounds is not a resistance-resultant behaviour in principle. On the other, resistance has a relational character, and surfaces when intentions are misaligned (Markus 1983). However, our study approaches interaction irrespective of the user's or the IT artefact's role (i.e., work or non-work related), suggesting that the tablet is not an entity imposed by an external power structure (e.g., work environment) to whose intention a user could resist. Nevertheless, resistance-related behaviour has surfaced more explicitly, with users highlighting numerous reasons for rejecting the tablet for specific tasks. Users did not seek to deploy any type of workaround, sophisticated or not, as they felt that the available solutions could not remedy the situation. Instead, they resort to a different IT artefact (e.g., e-reader) or entirely defer the task at hand, rather than adapt the tablet to their needs.

The resultant classification scheme of user accommodating practices is not inconsistent with the problem-focused and the emotion-focused coping strategies, set forth by coping theory. Specifically, our findings show that, users succeed in developing workarounds, provided that they acknowledge the problem at hand can be amended. Therefore, one may argue that a workaround is a problem-focused coping strategy. Similarly, rejecting and repositioning practices can be approached as emotion-focused coping strategies



when the user realises that there are no viable solutions and that “problem-solving efforts [could] be counterproductive” and even likely to cause distress (Lazarus 1993). As a result, the user may choose to distance her/himself from the situation (i.e., rejecting) or deny the existence of the problem altogether (i.e., repositioning). However, the central tenant of coping theory is that the individual seeks a coping mechanism to overcome a stressful encounter (e.g., a passing, imminent threat) (Lazarus 1993). In contrast, the focus of our study and that of sensemaking is on framebreaker events, i.e., unpredictable occurrences, which violate one’s expectations and which may be or may not be stressful, surprising or even indifferent. As a result, our findings, although corroborated by coping theory, differ significantly both in concept and in principle from previous studies based on coping theory, as the latter most often examine employees’ coping mechanisms and behaviour due to ICT-induced changes within an organization (e.g., Beaudry and Pinsonneault 2005; Kwahk 2011), security threats such as loss of data (e.g., Zhiling and Yufei 2012) or other forms of malicious IT (Liang and Xue 2009), which tend to be centred around exacerbated feelings of stress and anxiety regarding one’s position within a professional structure or security.

Our study’s contribution is twofold. On the theoretical level, we have examined user practices at the individual level and beyond a definite context of use, contrary to most studies, which adopt an organisational or task-specific perspective, awarding the individual or the technology with a fixed role. Since IT artefacts today exceed the confines of work and private life and are used interchangeably in numerous ways, assessing user sensemaking opens up an opportunity to highlight “areas in which sensemaking can break down and even fail” (Sieck et al. 2007) as deriving from the individual’s unsolicited effort to integrate the device into everyday routine and the reasons for which one may either reject it or have it ‘living’ in the periphery of everyday. On a practical level, our study can inform the design process of IT artefacts and applications. As sensemaking helps understanding user interaction (Griffith 1999), it equips designers towards grasping what users actually need, what they actually do and how they go about restoring a connection between the two when technology fails their expectations. As such, the proposed typology of user practices can help practitioners to comprehend the IT artefact’s shortcomings and why such practices may be necessary. Specifically, it can help them towards catering for such failings, either directly, by tackling them, or indirectly, by providing users with the means to develop more elegant workarounds, as shown through the lack of a directory structure and the relevant workarounds.

Like all studies, ours, too, comes with limitations. First, while we have examined in detail the various accommodating practices, we haven’t looked into their impact on, for example, user satisfaction and overall experience. Since these are of great interest for designers and managers, specifically because the focus is on a new genre of technology, future studies should address rejecting and workaround practices’ outcomes. Next, in most interpretive case studies, the primary data includes interview material. Nevertheless, following the philosophical hermeneutics paradigm, this is still possible through the close dialogue between researcher and text, and while the former succeeds in understanding the true meaning of the text. This is achieved by following the hermeneutic circle, examining the text in multiple passes and continuously re-evaluating second- against first-order constructions (Gadamer 1976). Another limitation stems from our material’s nature. Certainly, bloggers may prefer to focus on things, which they themselves consider as most striking, and disregard those that fall within our research questions. However, since we aimed at interpreting users’ experience, by adopting their standpoint, this allowed us to focus on their priorities, rather on our own preconceptions and permitted themes to emerge as narratives unfolded. Next, blogging may leave room for “impression management”. However, this may occur in almost every research scenario, as the researcher cannot ensure that participants answer truthfully, without distorting reality. Indeed, inconsistent results may arise when using blogs; yet, this is an issue only when the research question concerns “the construction of certain cultural ideas” and how these may be “affected by sociological variables such as age and gender”, which are often concealed by bloggers (Hookway 2008a).

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## References

- Alvarez, R. 2008. "Examining Technology, Structure and Identity During an Enterprise System Implementation," *Information Systems Journal* (18:2), pp. 203-224.
- Azad, B., and King, N. 2011. "Institutionalized Computer Workaround Practices in a Mediterranean Country: An Examination of Two Organizations," *European Journal of Information Systems* (21:4), pp. 358-372.
- Beaudry, A., and Pinsonneault, A. 2005. "Understanding User Responses to Information Technology: A Coping Model of User Adaptation," *MIS Quarterly* (29:3), pp. 493-524.
- Bhattacharjee, A., and Premkumar, G. 2004. "Understanding Changes in Belief and Attitude toward Information Technology Usage: A Theoretical Model and Longitudinal Test," *MIS Quarterly* (28:2), pp. 229-254.
- Boland Jr, R.J. 1997. "Information: As Understanding," in *Management, Information and Power: A Narrative of the Involved Manager*, L.D. Inrona (ed.). MacMillan, pp. 48-81.
- Boudreau, M.-C., and Robey, D. 2005. "Enacting Integrated Information Technology: A Human Agency Perspective," *Organization Science* (16:1), pp. 3-18.
- Brown, J.S., and Newman, S.E. 1985. "Issues in Cognitive and Social Ergonomics: From Our House to Bauhaus," *Human-Computer Interaction* (1:4), pp. 359-391.
- Chen, Y., and Potter, R. 2011. "The Role of Habit in Post-Adoption Switching of Personal Information Technologies: An Empirical Investigation," *Communications of the Association for Information Systems* (28), pp. 585-610.
- D'Adderio, L. 2011. "Artifacts at the Centre of Routines: Performing the Material Turn in Routines Theory," *Journal of Institutional Economics* (7:2), pp. 197-230.
- Dervin, B. 2003. "Chaos, Order, and Sense-Making: A Proposed Theory for Information Design," in *Sense-Making Methodology Reader: Selected Writings of Brenda Dervin*, B. Dervin, L. Foreman-Wernet and E. Lauterbach (eds.). Cresskill, NJ: Hampton Press, pp. 325-340.
- Ferneley, E.H., and Sobreperes, P. 2006. "Resist, Comply or Workaround? An Examination of Different Facets of User Engagement with Information Systems," *European Journal of Information Systems* (15:4), pp. 345-356.
- Flanagan, J.C. 1954. "The Critical Incident Technique," *Psychological Bulletin* (51:4), pp. 327-358.
- Gadamer, H.-G. 1976. *Philosophical Hermeneutics*. Berkeley, Los Angeles, London: University of California Press.
- Gasser, L. 1986. "The Integration of Computing and Routine Work," *ACM Transactions on Office Information Systems* (4:3), pp. 205-225.
- Gopal, A., and Prasad, P. 2000. "Understanding GDSS in Symbolic Context: Shifting the Focus from Technology to Interaction," *MIS Quarterly* (24:3), pp. 509-546.
- Griffith, T.L. 1999. "Technology Features as Triggers for Sensemaking," *Academy of Management Review* (24:3), pp. 472-488.
- Hirt, S.G., and Swanson, E.B. 1999. "Adopting SAP at Siemens Power Corporation," *Journal of Information Technology* (14:3), pp. 243-251.
- Hookway, N. 2008a. "'Entering the Blogosphere': Some Strategies for Using Blogs in Social Research," *Qualitative Research* (8:1), pp. 91-113.
- Hookway, N.S. 2008b. "Human Documents Research: From the Diary to the Blog," *Re-imagining sociology. Annual conference of the Australian Sociological Association*, The University of Melbourne, Victoria, pp. 1-18.
- Huuskonen, S., and Vakkari, P. 2013. "'I Did It My Way': Social Workers as Secondary Designers of a Client Information System," *Information Processing & Management* (49:1), pp. 380-391.
- Jasperson, J., Carter, P.E., and Zmud, R.W. 2005. "A Comprehensive Conceptualization of Post-Adoptive Behaviors Associated with Information Technology Enabled Work Systems," *MIS Quarterly* (29:3), pp. 525-557.
- Klein, G., Moon, B., and Hoffman, R.R. 2006. "Making Sense of Sensemaking 2: A Macrocognitive Model," *IEEE Intelligent Systems* (21:5), pp. 88-92.
- Klein, G., Phillips, J.K., Rall, E.L., and Peluso, D.A. 2007. "A Data/Frame Theory of Sensemaking," *Expertise Out of Context: 6th International Conference on Naturalistic Decision Making*, R.R. Hoffman (ed.), Boca Raton, Florida, USA: Lawrence Erlbaum Associates, Taylor & Francis Group, pp. 113-155.
- Koopman, P., and Hoffman, R.R. 2003. "Work-Arounds, Make-Work, and Kludges," *IEEE Intelligent*

- Systems* (18:6), pp. 70-75.
- Kwahk, K.-Y. 2011. "Investigating the Coping Mechanism Towards Technochanges: A Perspective of Social Network Theory," *44th Hawaii International Conference on System Sciences (HICSS 44)*, pp. 1-10.
- Lapointe, L., and Rivard, S. 2005. "A Multilevel Model of Resistance to Information Technology Implementation," *MIS Quarterly* (29:3), pp. 461-491.
- Lazarus, R.S. 1993. "Coping Theory and Research: Past, Present, and Future," *Psychosomatic Medicine* (55:3), pp. 234-247.
- Liang, H., and Xue, Y. 2009. "Avoidance of Information Technology Threats: A Theoretical Perspective," *MIS Quarterly* (33:1), pp. 71-90.
- Limayem, M., Hirt, S.G., and Cheung, C.M.K. 2007. "How Habit Limits the Predictive Power of Intention: The Case of Information Systems Continuance," *MIS Quarterly* (31:4), pp. 705-737.
- Malakis, S., and Kontogiannis, T. 2013. "A Sensemaking Perspective on Framing the Mental Picture of Air Traffic Controllers," *Applied Ergonomics* (44:2), pp. 327-339.
- Markus, M.L. 1983. "Power, Politics, and MIS Implementation," *Communications of the ACM* (26:6), pp. 430-444.
- Martinko, M.J., Zmud, R.W., and Henry, J.W. 1996. "An Attributional Explanation of Individual Resistance to the Introduction of Information Technologies in the Workplace," *Behaviour & Information Technology* (15:5), pp. 313-330.
- Nach, H., and Lejeune, A. 2010. "Coping with Information Technology Challenges to Identity: A Theoretical Framework," *Computers in Human Behavior* (26:4), pp. 618-629.
- Nardi, B.A., Schiano, D.J., Gumbrecht, M., and Swartz, L. 2004. "Why We Blog," *Communications of the ACM* (47:12), pp. 41-46.
- Orlikowski, W.J. 2000. "Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations," *Organization Science* (11:4), pp. 404-428.
- Orlikowski, W.J., and Baroudi, J.J. 1991. "Studying Information Technology in Organizations: Research Approaches and Assumptions," *Information Systems Research* (2:1), pp. 1-28.
- Ozok, A.A., Benson, D., Chakraborty, J., and Norcio, A.F. 2008. "A Comparative Study between Tablet and Laptop PCs: User Satisfaction and Preferences," *International Journal of Human-Computer Interaction* (24:3), pp. 329-352.
- Serenko, A. 2006. "The Use of Interface Agents for Email Notification in Critical Incidents," *International Journal of Human-Computer Studies* (64:11), pp. 1084-1098.
- Sieck, W.R., Klein, G., Peluso, D.A., Smith, J.L., and Harris-Thompson, D. 2007. "Focus: A Model of Sensemaking," United States Army Research Institute for the Behavioral and Social Sciences. Technical Report 1200.
- Tractinsky, N. 2004. "Toward the Study of Aesthetics in Information Technology," *International Conference on Information Systems (ICIS 2004)*, Washington, DC, USA: Association for Information Systems, pp. 771-780.
- Venkatesh, V., Thong, J.Y.L., and Xu, X. 2012. "Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology," *MIS Quarterly* (36:1), pp. 157-178.
- Walsham, G. 1995. "Interpretive Case Studies in IS Research: Nature and Method," *European Journal of Information Systems* (4:2), pp. 74-81.
- Weick, K.E., Sutcliffe, K.M., and Obstfeld, D. 2005. "Organizing and the Process of Sensemaking," *Organization Science* (16:4), pp. 409-421.
- Yi, J.S., Kang, Y.-a., Stasko, J.T., and Jacko, J.A. 2008. "Understanding and Characterizing Insights: How Do People Gain Insights Using Information Visualization?," in: *Workshop on BEyond time and errors: novel evaluation methods for Information Visualization*. Florence, Italy: ACM, pp. 1-6.
- Zhiling, T., and Yufei, Y. 2012. "Understanding User's Behaviors in Coping with Security Threat of Mobile Devices Loss and Theft," *45th Hawaii International Conference on System Science (HICSS 45)*, pp. 1393-1402.