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An Interdisciplinary Review of Ephemerality for Information Systems Research

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Abstract. Ephemerality should be a significant concept for the information systems (IS) discipline but has not been developed as such. On the one hand, ephemerality is considered a characteristic of the IS “core” and focus, of data, information, and knowledge, and of digital material and the experience of digital technologies. On the other, IS reference to ephemerality is relatively scarce, and use of the term tends to implicitly rely upon the dictionary definition only. As a result, ephemerality is not well defined in the IS literature. Our aim in this study is to contribute to broader and deeper IS understanding of ephemerality. This is important because systems of people and technology are reformulating the meaning of ephemeral. Reformulating our understanding of ephemeral can improve our understanding of diverse, fast-paced, and quickly changing contexts for transfer and diffusion of digital technology. While our ultimate focus is ephemeral in digitalised contexts, our overarching focus is ephemerality as a standalone concept. We conduct an interdisciplinary review of the temporal and material qualities of the ephemeral in disciplines including sociology, philosophy, organisation studies, performance studies, new media studies, and IS. Out of this review, we propose a definition for ephemeral and develop a conceptual framework of ephemeral dimensions and characteristics, in which ephemerality is not only characterized by short-lived, unstable duration, but also by repetition, recombination, and durability. We conclude by briefly situating the framework in an IS context.

Keywords: Ephemeral, Information Systems, Interdisciplinary, Review

1 Introduction

The *Oxford English Dictionary* (2004) defines ‘ephemeral’ as ‘lasting or used for a very short time.’ Ephemeral phenomena and materials shape human experience of the world (Döring et al., 2013). Indeed, it is routinely assumed (Conboy et al., 2020; Kavanagh, 2007) and theorized that our increasingly digitized world is particularly ephemeral (e.g.: Urry, 2000; Bauman, 2000; Castells, 1996). The lifespans of digital technologies, of digital information and its circulation, of work and news cycles, and of popular culture and market trends seem progressively evanescent. In the information systems (IS) context, ephemerality is considered characteristic of the IS “core” and focus (Lytinen & King, 2004; Niederman et al., 1990), of digital material (Yoo, 2010; Lytinen, 2021),

and of the human experience of digital technologies (Yoo, 2010). Ephemerality is now emerging in IS as an intentional design choice (Xu et al., 2018) in areas like the Internet of Things (IoT) (Huang et al., 2019), blockchain (Henry et al., 2018), and social media (Morlok et al., 2018), not least because the technical, regulatory, and social scenarios that require ephemerality are seemingly escalating (Giallorenzo et al., 2019).¹

The problem is that the concept of ephemerality is not well defined in the literature. Ephemerality is most frequently applied in IS as an adjective but with little qualification (e.g.: ephemeral online communities (Quintarelli et al., 2019), ephemeral blockchain functions (Gisdakis et al., 2015), and ephemeral design knowledge (vom Brocke et al., 2020)). Yoo's (2010) impactful and insightful experiential computing paper notes ephemerality as one of three characteristics of digital but does not delineate what ephemeral means. In such cases, IS researchers are informed only by the dictionary definition and the context of the individual study. If digital is the future of IS (Burton-Jones et al., 2021) and ephemerality partially characterizes digital, we believe that a broader and deeper understanding of ephemerality will benefit IS stakeholders.

Bødker (2017), for example, suggests that IS must 'move towards a more general concern with how ubiquitous and pervasive computing is *entangled* with mundane "being"'. Broader and deeper conceptualisation of the everyday ephemeral can augment theorization of digital. As Taylor (2007, p.4/5) puts it, 'digital technologies... further ask us to reformulate our understanding of... the ephemeral.' The challenge is to determine not only how digital is ephemeral, but also how digital is reformulating the meaning of ephemeral. IS researchers are well positioned to provide new theoretical perspectives on, for example, the ephemerality of digital transformation boundaries (Sandberg et al., 2020), of information and knowledge (Salovaara & Tuunainen, 2015; Alavi & Leidner, 2001), and of organizations (Prester et al., 2019), as well as the ephemeral nature of the sociomaterial and processual (Orlikowski & Scott, 2008; Mousavi Baygi et al., 2021). Enhanced understanding can also contribute to disentangling the ephemeral from associated (and similarly elusive) digital-related concepts such as social acceleration (Fichman et al., 2014) and fluidity (Malhotraa & Majchrzak, 2021).

On the other hand, lack of conceptual depth stymies development of normative principles around ephemerality, raising potentiality for ephemerality-related risk (McPeak, 2018; Shein, 2013). The ephemeral highlights, for example, regulatory and corporate compliance concerns around the technical preservation of knowledge (Kelly & Baron, 2019). Ephemerality-based social media² are implicated in US election interference (Mueller, 2019) and Uber has directed employees to no longer use such platforms for Uber-related business. We will not adequately regulate for the consequences of digital ephemerality without better understanding what the ephemeral implies. Enhanced un-

¹ Technical scenarios include storage constraints around IoT systems. Regulatory scenarios include concerns around persistence of data. Social scenarios include user desire for more authentic forms of digital communication. Mark Zuckerberg claims that ephemeral-type social media 'are by far the fastest growing areas of online communication' (Zuckerberg, 2019).

² Examples of 'ephemerality-based platforms' (Morlok et al., 2018) include Snapchat, Telegram, Wickr, Clubhouse, and Confide. Other apps are also adding ephemeral functionality to their platforms, such as Facebook and Instagram Vanish Mode, TikTok Stories, WhatsApp View Once, and Twitter Spaces. Web-tools like TweetDelete enable automatic deletion of tweets.

derstanding may also help disentangle the ephemeral from issues like privacy, anonymity, and trust (Welsh, 2020; Schlesinger et al., 2017).

However, despite noteworthy IS reference to the ephemeral, to the best of our knowledge no IS study characterizes the concept in depth. Ephemerality is receiving attention in other fields. In the humanities and social sciences, the ephemeral informs interpretations of modernity and postmodernity (e.g.: Simmel, 1900; Harvey, 1989; Castells, 1996; Bauman, 2000; Rosa, 2019). There is a rich lineage of ephemerality as a concept in the performance arts (Reason, 2006) and in media studies (Grainge, 2011). Philosophers (e.g.: Bergson 1911, 1946; Buci-Glucksmann, 2003; Grosz, 2013), artists (e.g.: Purpura, 2009), and urban planners (e.g.: Lefebvre, 1970; Crane, 2015; Vera & Mehrotra, 2015) have been motivated by ephemerality. Ephemerality is also a feature of studies in philosophy of science (Glennan, 2009), organisation studies (e.g.: Bakker et al., 2016; Elkjaer, 2017; Sydow, 2017), computer science (e.g.: Schlesinger et al., 2017), consumer research (Bardhi & Eckhardt, 2017), cyberpsychology (Utz et al., 2015), marketing (Belanche et al., 2019), and communication (Bayer et al., 2016; Kaun & Stiernstedt, 2004). The contexts of digitalisation are common to most recent studies.

We suggest the IS perspective on ephemerality should be widely and uniquely informative, not least because ephemerality is seen to challenge both social and technical norms (Haber, 2019; McRoberts et al., 2017). For example, with the rate of digital innovation, product introduction, and diffusion accelerating (e.g.: Gunther McGrath, 2013), we might consider how ephemeral materials, spaces, timelines, and interactions challenge traditional theory around technology diffusion (e.g.: Rogers, 1963). The objective of this research, therefore, is to contribute toward overcoming the issues and realizing the benefits outlined above by providing a rich definition and characterisation of the ephemeral based upon an interdisciplinary literature review of the term.

The remainder of this article is structured as follows: in section 2, we discuss the theoretical background relevant to the review; in section 3, we outline our methodological approach; in section 4, we present our interdisciplinary review, develop a conceptual framework of ephemeral dimensions and characteristics, and propose a definition for ephemeral; section 5 situates our conceptualisation of ephemeral in an IS context.

2 Theoretical Background

As per *Merriam-Webster* (2022), the etymological roots of ‘ephemeral’ are found in the Greek word *ephēmeros* from the stems *epi-* (meaning ‘on’ or ‘in’) and *hēmera* (meaning ‘day’), which, in combination, yield the adjective *ephemeron* (meaning ‘lasting (only) a day’). Young (2003) provides an excellent account of the historical development of the term and its derivatives, noting *ephemera* (plural of *ephemeron*) as the source of our contemporary ‘short-lived’ understanding. Today, *ephemera* is largely employed as a noun for things that exist or are used for a short time only. Early usage includes Aristotle applying *ephemera* to insects of very brief life span and the astronomical and astrological use of tabulated texts called *ephemerides* (plural noun derived from the adjective) to identify the regular placement of celestial bodies on specific days.

It is not until the 1800s, however, that an increase is noted in the use of the adjectival form *ephemeral* through its ‘application to transitory objects and abstract ideas’ (*ibid.*).

‘Ephemeral’ thus emerges in the nineteenth century as a ‘signifier’ of modernity (Marcus & Saka, 2006). Baudelaire (1863), characterizing modernity (in part) as ‘the ephemeral, the fugitive, the contingent,’ worries about ‘a riot of [ephemeral] details’. As such, the task is to ‘distill the eternal from the transitory’ (*ibid.*), which sets an antagonistic and dualistic template of sorts, particularly in Western thinking, for the modernist relationship with the ephemeral. In modernity, the ephemeral is ‘that which is resistant to meaning’ (Doane, 2002, p11). For Marx, Dostoevsky, and Goethe, the ephemeral must be ‘confronted’ and, as is possible, ‘dealt with’ (Harvey, 1989). And even though, for Benjamin (1918, p.100) ‘the integrity of an experience that is ephemeral’ must be established on its own terms, for he too the perceived rise of the ephemeral in modernity is a form of ‘hell’ (Osborne & Charles, 2020). This negative, acutely modernist sense of the ephemeral is borne not only of its problematic ‘representability’ (Doane, 2002, p.11), of our inability to fix and quantify ephemeral value, but also of an emergent sense of the implications of ephemerality for stable societal structures, processes, and relations. In ephemeral digital contexts, for example, where the ephemeral is ‘commonly seen more as a problem than as a solution’ (Cotta et al., 2015), ‘fixing’ the ephemeral remains the predominant objective. The imposed aim for technologies, in the main, has long been to ‘de-ephemeralise’ the ephemeral (Evans, 2011).

The ephemeral is perhaps most directly confronted in postmodern thinking. Given its basis in a ‘weak’ ontology of *becoming*’ (Chia, 1995), postmodernism ‘wallows’ in ‘total acceptance of... ephemerality’ (Harvey, 1989, p.27). In challenging the logic of language and organizing, the postmodernist aims to more adequately express ‘the ephemeral aspects of process’ (Chia, 1995). It is not surprising then that the ephemeral receives particular attention in research traditions that, firstly, are significantly defined by their relation to the transitory and, secondly, wrestle with postmodern perspectives. For example, Artieri and colleagues (2020) note that ephemerality is a core focus in performance studies (e.g.: Phelan, 1993) and in media studies (e.g.: Grainge, 2011). On one level, the primary research challenge of the ephemeral is to ‘write time’ (Reason, 2006), which, as we know, can be exceptionally difficult (e.g.: Dawson, 2014). However, time is not the only concern when considering what counts as ephemeral.

Across the literature, two dimensions of the ephemeral reflect dictionary definitions: the temporal and the material. The temporal refers, as per standard definition (*ephemeral*), to experiences or perceptions of short duration: the perception of a rainbow, the experience of verbal interaction, the brief timeline of an ephemeral digital text. The material refers, as per standard definition (*ephemera*), to objects or things of time-limited and insubstantial value: train tickets, event programs, the content of an ephemeral digital text. In our view, it is essential to consider both the temporal and material aspects of the ephemeral for three reasons. Firstly, because digital is theorised to have material properties (Yoo, 2010; Leonardi, 2010). If digital is ephemeral, it is ephemeral in material and temporal ways. Secondly, because the qualities of material ephemera ‘reflect the fact that they [are] only designed for short-term existence’ (Crowther & Mac Cumhaill, 2018). In other words, the material qualities of the ephemeral shape the temporal qualities of the ephemeral, and vice versa. And thirdly, because conceptualisation of

the ephemeral as solely temporal (or material) will be complicated by several additional factors. As will be developed in section 4, the ephemeral is not merely time-bound, singular, and insubstantial: the unstable ephemeral is also repetitive, recombinatory, and durable, with agency and meaning distributed in time.

3 Methodological Approach

Motivated by an interdisciplinary IS review (Smith et al., 2015) of another ‘hard-to-fix’ concept (privacy), the three-stage, concept-centric review approach proposed by Webster and Watson (2002) is followed. First, we performed a broad search spanning the information systems, social sciences, philosophy, humanities, marketing, management, and organisation theory literatures. We queried relevant library catalogues, journal databases, and conference proceedings. Search terms included ‘ephemeral’, ‘ephemeral AND definition’, ‘ephemeral AND information systems’, and ‘ephemeral AND digital’. Secondly, working *backward* to broaden the scope further (*ibid.*), we reviewed the citations for the articles identified in step one, identifying literature of potential interest in other disciplines, including performance and media studies. Finally, we used Web of Science to work *forward* (*ibid.*), identifying further candidate articles citing the key articles previously identified. In total, 135 articles and 26 books were selected.

4 Interdisciplinary Review of the Ephemeral

Sub-sections 4.1 through 4.4 present our interdisciplinary review of the ephemeral. A tabulated conceptual framework of ephemeral dimensions and characteristics follows in sub-section 4.5. A definition for the ephemeral is proposed in sub-section 4.6.

4.1 Short-lived: Speed, Compression, Limitation

Ephemeral timespans can range from split seconds, through minutes, weeks, and months, to years (Doring et al., 2013; Datry et al., 2017; Vidal-Abarca et al., 2020) and millions of years in, for example, geological contexts (Rohr & Furlong, 1995). Nevertheless, in any specific context, the ephemeral always seems relatively short-lived (Schneider & Foot, 2004), always conveys ‘connotations of brevity and evanescence’ (Grainge, 2011, p.3). For example, ephemeral products (such as ephemeral hygiene products (López-Forniés & Sierra-Pérez, 2021) or ephemeral digital products, like Snapchat (Villaespesa & Wowkowych, 2020)) are ‘short-term oriented’ (Janssen et al., 2014). Approached as form, process, or perspective, the ephemeral always seems short-term (Bakker et al., 2016). Ephemeral ‘briefness’, however, is not only defined in terms of duration. The short-lived quality of the ephemeral is also shaped by interrelated forms of speed, compression, and limitation.

Firstly, social theorists have described the ephemeral in terms of an accelerated (and accelerating) pace of change and life (e.g.: Bauman, 2000; Urry, 2000; Rosa, 2013). Ephemeral speed is evident in the turnover of technologies, fashions, products, labor processes, ideas, and images (Urry, 1995, p.177); in the ‘high-speed temporality’ of

social media practice (Arda, 2021); in ephemeral organizations having to ‘quickly convert decision into action’ (Lanzara, 1983), and in the speed of access to ephemeral forms of consumption (Bardhi & Eckhardt, 2017). Ephemeral speed is further illustrated in relationships that are quickly formed and disbanded (Biraghi et al., 2018), in the speed of production and circulation for various types of new media (Grainge, 2011, p.3), and in the acceleration of sociotechnical innovation (Heylighen, 2007). However, Chun (2008) advises that we need to ‘think beyond speed’ because ‘flow and segmentation do not quite encompass digital media’s ephemerality.’

Secondly, the ephemeral compresses perceptual boundaries of value to timeframes localised to the present. As Young (2003) puts it, ‘immediacy binds the ephemeral object more tightly to the occasion.’ This compressed relationship of the ephemeral and the present time reinforces its short-lived nature. That the ephemeral ‘inhabits the present’ (Chun, 2016, p.160) and is perceivable in the ‘here and now’ is not only ‘essential for [its] effectiveness’ (Grudin, 2001, citing Toda, 1991) but also intensifies the impact – both immediate *and* longer term – of the ephemeral. High-level social theory abstractions like ‘time-space compression’ (Harvey, 1989), ‘timeless time’ (Castells, 1996), ‘liquid modernity’ (Bauman, 2000), and ‘instantaneous time’ (Urry, 2000) theorise this quality of the ephemeral. Liquid modernity, for example, describes a rate of change so short-lived, quickly changing, and present-oriented that effective stabilisation of societal structures is no longer feasible. Eckhardt and Bardhi (2020), drawing from Bauman to develop a framework of ‘liquid consumption’ around three constructs (one being ephemerality (Bardhi & Eckhardt, 2017)), note that the ephemeral refers to ‘the expiration date of value increasingly shortening’. In characterising the ephemerality of ‘instantaneous time’, Urry also observes (2000, p.125) that time-horizons for decision-making are dramatically compressed.

Thirdly and consequently, the short-lived ephemeral is by nature limited. ‘Anchored in the present’ (He & Kivetz, 2016), the nature of ephemeral time is ‘fundamentally perishable’ (Reason, 2006) and the ephemeral moment seems materially ‘constrained’ (Bayer et al., 2015). The ephemerality of live performance is one clear example (Kirby, 1974; Barba, 1990; Schieffelin, 1998). Dance, for instance, is said to exist at a ‘perpetual vanishing point’ (Siegel, 1972) whereby, ‘at the moment of its creation it is gone.’ Phelan (1993) and Auslander (1999) note that ephemeral live performance is predicated upon disappearance; ephemeral organisations ‘are there to disappear’ (Lanzara, 1983); for Grainge (2011), the ephemerality of web content means that ‘digital materials are always under threat of disappearing’; ephemeral digital texts can be materially restricted to a specific number of views or a pre-determined span of viewing time (Chen & Cheung, 2019; Vazquez-Herrero et al., 2019), and ephemeral edge computing proposes computation limited by ‘stringent time constraints’ (Lee et al., 2020).

In sum, the short-lived (durational) quality of the ephemeral is characterised by speed (of change), compression (of space, time, artifact, action, experience, value, and/or relevance to the present), and limitation (of space, time, artifact, action, experience, value, and/or relevance).

4.2 Repetitive: Anticipated, Varied

Ephemeral time is a time ‘of repetitions and variations’ (Buci-Glucksmann, 2012). Performance scholars illuminate the repetitive quality of the ephemeral through the logic that ‘ephemerality [is] ‘repeated each night of a repeated live performance’ (Reason, 2006). For media scholars, television programs are ‘ephemeral in the sense of being both fleeting and repeated’, with the *most repeated* programs considered particularly ephemeral (Uricchio, 2011, p.28-31). And Schneider and Foot (2004) write that digital content is ‘ephemeral in its construction’ because it must be reconstructed or reproduced to be experienced. The ephemeral is also cyclically repetitive. Brassley (1998) describes ephemeral cycles of change in the study of landscapes, ranging from twice-daily (i.e.: the movement of tides) to the progression of the seasons. Archaeological ephemeral artworks related to rites and performances are cyclical (López-Bertran, 2019). And for Vera and Mehrotra (2015), the cyclically celebrated religious event in the ephemeral city of Kumbh Mela expresses ‘a range of [material and temporal] ephemeral configurations.’ In such places – and others, like humanitarian camps, natural disaster shelters, work settlements, and music festivals – the life cycle of the material ephemeral object (be it city, camp, shelter, settlement, or festival environment) – aligns with the duration of the activity so that objective start and end times are predictable. Applying the same logic to theatre spaces, we might say that ephemerality is repeated, Wednesday through Sunday, from 8pm to 11pm, for three months.³

Ephemeral repetition, therefore, not only infers orientation to the ephemeral ‘past’ but also anticipation of the ephemeral ‘future’. Anticipation can range from the relative certainty of ‘*anticipated ephemera*’ (Brassley, 1998) (that is, ephemeral repetition we fully expect to occur) to the uncertainty of the ephemeral as ‘a space of projective anticipation’ (Crane, 2015). For example, we may accurately anticipate the future repetition of tide movements, the upcoming run of a play, or the materialisation of a revisited webpage. Similarly, ‘anticipation of the future embodied actions and activities’, or *how* ephemerality *might* be repeated, is an important feature in ephemeral work settings (Hindmarsh & Pilnick, 2007). The ephemeral is ‘full of anticipation’ (Purpura, 2009). Drawing from Lefebvre (1970), Crane (2015) describes the ephemeral urban space as one of ‘projective anticipation’, where ‘groups take control of spaces for expressive actions and constructions, which are soon destroyed’ (Lefebvre, 1970, p.130). Pop-up spaces, demonstration or celebration spaces, walls or hoardings displaying flyers and graffiti, and virus-testing or vaccination clinics are illustrative instantiations of ephemeral urban space. The ephemerality of these spaces is characterized not only by being short-lived but also by the anticipation that the ephemeral will be repeated *in* the space.

Finally, ephemeral repetition is further evident in the habituation of ephemeral actions. Consider, for example, the ephemerality of a mouse-click or the ease with which the ephemeral is enacted through taps, swipes, and scrolls on mobile digital platforms.

³ Opposing this perspective is the view that the ephemerality of performance is ontologically unrepeatable; the idea that ‘a gesture, once made, can never be made the same way twice’ (Artaud, 1938, p.75). Albeit an extreme example, the staging of the 20,000th performance of *The Mousetrap* in London on 16 December 2000 challenges the demonstrable practicality, if not the essence, of this perspective (Reason, 2006, p.16).

‘Repetition breeds expertise,’ writes Chun (2016). In this sense, following Bergson and Deleuze, repetition through the habitual enables forms of stability ‘in a universe in which nothing truly repeats’ (Grosz, 2013). For Deleuze (1994), to repeat ‘is to behave in a certain manner, but in relation to something unique or singular.’ Using the example of festivals, Deleuze writes that repetitions ‘do not add a second and a third time to the first, but carry the first time to the ‘nth’ power.’ Hindmarsh and Pilnick (2007) reflect this understanding in their study of ephemeral workteams in surgical settings, where actors ‘(re)produce the routine or normative character of activities *for the first time again*.’ We might say in summation that ephemeral repetition orients to the past to stabilise the present in a variation of that past, and, simultaneously, anticipates the future in repeated and varied forms of the ephemeral present.

Consequently, the short-lived limitation of disappearance does not negate the possibility of ephemeral repetition. For Phelan (1993), repetition marks the repeated as ‘different’. In other words, the ephemeral repeats in ephemeral ways: there is always some variation, something unique, in repetitions of the ephemeral.

4.3 Recombinatory: Multiple Possibilities

The short-lived ephemeral is recombinatory. Ephemeral recombination repurposes the ‘old’ ephemeral artifact, action, space, or experience in a ‘new’ ephemeral present. The ephemeral city is dismantled and its material components ‘recycled or repurposed’ (Vera & Mehrotra, 2015). Ephemeral architecture is a ‘system in which entire fragments of the building may be reclaimed and preserved’ (Armada, 2012). And ‘old’ ephemeral media texts are recombined again and again in ‘new’ ephemeral sequences and contexts (Urrichio, 2011, p.28). Digital technology intensifies the ephemeral capacity for recombination. For example, the ephemeral recombination of prodigious volumes of diverse and ephemeral digital texts (Grainge 2011, p.3; Chun, 2008) is endemic in copying, cutting, pasting, splicing, and circulation of ephemeral digital texts. Mashup applications similarly enable recombination of diverse functionalities from multiple web domains (Kreps & Kimppa, 2015).

We distinguish the ephemerally repetitive from the ephemerally recombinatory in two interrelated ways. Firstly, where the meaning or knowledge gained from the ephemerally repetitive is sufficiently *similar* to the past or ‘first’ ephemeral, the meaning or knowledge gained from the ephemerally recombined is sufficiently *different*. For example, the roof of a food stall in the ephemeral city is recombined as one wall of a dwelling in a work settlement. Or the rerun of a television series recombines the ephemeral meaning of the artifact (the ‘framework of coherence’ (Urrichio, 2011, p.28) for both old and first-time viewers. The ephemeral not only implies ‘degradation or disappearance, but... is also productive, transformative’ (Purpura, 2009).

And secondly, where the ephemerally repetitive *anticipates* the future, the ephemerally recombinatory opens up the future in *multiple possibilities*. Lefebvre (1970) defines the urban ephemeral space as ‘multifunctional, polyvalent, transfunctional’ (Crane, 2015). In the ephemeral city, there are ‘infinite possibilities for recombination’ (Vera & Mehrotra, 2015). Guillaume and Huysmans (2018) suggest the ephemeral ‘intro-

duces a multiplicity of political temporalities.’ In ephemeral organisations, the ‘possibilities for action and response are multiplied’ (Lanzara, 1983). And in the context of consumer entrepreneurship, for Biraghi and colleagues (2018) it is the ephemerality of digital platforms that ‘holds together the whole business model, throughout creating, de-configuring, and re-configuring.’ In the examples cited, however, there remains a sense of linearity and succession, which the ephemeral is theorised to disrupt. Time is also recombined through the ephemeral.

In its future orientation, the ephemerally recombinatory is more fragmented and disjointed than the ephemerally repetitive. For Castells (1996), the temporality of ‘timeless time’ disorders succession and fosters simultaneity, creating what he terms ‘structural ephemerality’ (Castells; 2004, p.57). For example, remote and non-linear work-day models (Gibbs et al., 2021; Dong et al., 2021) disorder the traditional segregation and linear flow of the working day, highlighting the overlap between ‘ephemeral computing’ and ‘ubiquitous computing’ (Cotta et al., 2015; Camacho et al., 2018). In a similar vein, media scholars note that as the digitized file can be recombined (that is, stopped, repeated, rearranged, edited, catalogued, and discarded (Kompare, 2002, p.1), it disorders the traditional, linear temporal logic of broadcast flow (Williams, 1974). In cultures organized around systems of electronic media, the various forms of ‘ephemeral symbolic communication’ (Castells, 2000) become a productive constituent of ephemeral ‘timeless time’ (i.e.: reality) (Castells, 1996; Buci-Glucksmann, 2012). Fundamental to these systems, through digitalization and recurrent communication, is their recombinatory ability (Castells, 2004, p.12). While the digitized media file should, in theory, resist ephemerality, online streaming of files is ultimately considered ephemeral because, in part, files are amenable to external recombination.

In sum, recombination of the ‘past’ ephemeral (space, time, artifact, action, or experience) enables repurposing *of* the ephemeral *from* the ephemeral in fragmented, disjointed ways that opens up the future in multiple possibilities.

4.4 Unstable, Durable

The short-lived ephemeral is unstable. Ephemerality is directly associated with organisational instability (Bechky, 2006; van Marrewijk et al., 2016). Ephemeral art is ‘inherently unstable’ (Purpura, 2009) and ephemeral digital art ‘utterly unstable and prone to endless transformations’ (Denoit, 2014). Digital is ephemerally unstable because, for example, software and hardware ‘constantly change, manically upgrade’ (Chun, 2016). Ephemeral computing environments are unstable and ever-changing (Cotta et al., 2016; Camacho et al., 2018). And ephemeral time is ‘unstable time, made up of fragments’ (Guillaume & Huysmans, 2018). In processual terms, ‘ephemeral emergence’ (Sawyer, 2005, p.210-214) cannot be known in advance because it occurs within ‘episodic interactive encounters’ (Tsoukas, 2016). In postmodern terms, the ephemeral ‘is interested in following traces, glimmers, residues, and specks of things’ (Muñoz, 1996, p.10).

The instability of the ephemeral underpins the modernist challenge of ‘fixing’ the ephemeral. Archivists have a difficult time categorising, storing, and defining ephemera

(Young, 2003). Political scientists suggest the ephemeral cannot be represented statically (Guillaume & Huysmans, 2018).⁴ The concept of ‘stage detritus’ highlights the ‘unstable’ state of live performance (Reason, 2006, p.54). And in media research the ephemeral has been used to signify ‘moving image detritus’ (Grainge, 2011, p.2), such as out-takes, outdated television sets, and the trash associated with movie theatres (Hastie, 2007). Finally, the ephemeral as a concept is somewhat passed over in the processual literature (Kreps et al., 2020), where reality is ephemerally unstable and stability, not change, must be accounted for (Chia & Nayak, 2017). The Bergsonian, not ‘short-lived’, sense of duration applies in processual thinking, where ‘temporariness’ is ‘centerstage’ (Bakker et al., 2017) and ‘the ephemeral and dynamic becomingness of human experience as a continuous flow of creative action’ is the focus (Garud et al., 2015).

However, the short-lived, unstable ephemeral is also durable. For archaeologists, the ephemeral is ‘embodied or materialized in durable objects’ (López-Bertran, 2019). Anthropologists note that ephemeral objects of value are also ‘the durable material of cultural resilience and continuity’ (Lepani, 2012, p.75), with the short-lived limitation of such objects catalysing their durability (MacCarthy, 2017). Ephemeral architecture sustains cultural meaning (Armada, 2012) and legacy (Colfer, 2019). ‘Resilience’ is a key property of any algorithm operating in ephemeral environments (Camacho et al., 2018). And the limitations of ephemeral social media content result in ‘less loss (or forgetting)’ of ephemeral content than of content perceived as more stable (van Nimwegen & Bergman, 2019; Bayer et al., 2016). Digital technology intensifies ephemeral durability, complicating ‘any clear division between technology as *either* permanent *or* ephemeral’ (Evans, 2011, p.157; *italics added*). Chun (2016) writes that digital information is ‘curiously undead, constantly regenerating’. And media scholars note that although the ‘configuration of space/time constructed through online media’ is unstable and fragmented, the ephemeral fragments ‘are so abundant as to be inexhaustible’ and ‘connect us into a network’ (Grainge, 2011, p.224). In the workings and experience of this network, the ephemeral is ‘made to endure’ (Chun, 2008).

Ephemeral durability attunes us to the anticipation and possibility *in* the ephemeral and distributes the ephemeral in time. Repetition and recombination prolong the durability of the ephemeral by extending or repurposing the ‘prior’ ephemeral in the ‘new’ ephemeral present. The past of a primary ephemeral text (e.g.: a tweet) is ‘reactivated’ through ‘knowledge that has since been acquired’ (Uricchio, 2011, p.29/30). Or the ‘affective ephemera of likes and comments’ (Haber, 2019) stimulates what has objectively passed, regenerating new agency, meaning, and durability in the ephemeral.

Finally, the durability of the unstable ephemeral guides us toward the idea that the ephemeral is not only short-lived but ‘eternal’ (e.g.: Benjamin’s ‘eternal ephemerality’ (1920/21, p.281); Castells’ ‘eternal ephemerality’ (2010, p.497), and what Jameson (1991, p.64-68/71-2), after Lacan, calls the ‘eternal present’ (the unification of past and future with present)). In a landmark new media paper, Chun (2008) observes that digital technology originates non-linear temporalities that move ‘simultaneously towards the future and the past’, proliferating what she terms ‘enduring ephemerals’. When digitalisation facilitates the ephemeral gathering of ‘everything into the present’ (Chun, 2016),

⁴ Performance art scholars directly address this tension through, for example, critical review.

the modernist tension inherent to the unstable ephemeral is no longer a dualism but a duality, no longer ‘either/or’ but ‘and’: the ephemeral is fleeting *and* persistent (van Nimwegen & Bergman, 2019), old *and* new (Chun, 2008), ‘open-ended *and* constrained’ (Tsoukas, 2016), short-lived *and* durable (Pimlott, 2011; Gale, 2009). We are given a sense of this perspective in Prado and Sapsed’s (2016) study of ephemeral innovations in project-based organisations, where ‘permanence is only realized through activation in the temporary.’

Husserl emphasizes that no experience is ephemeral merely in the sense of being short-lived or momentary (Moran, 2011). The short-lived ephemeral ‘is not fleeting’ (Haber, 2019). Rather, lived experience and ‘the objective moment constituted in it, may become “forgotten”; but for all this, it in no way disappears without a trace... it has merely become latent’ (Husserl, 1948/1973, p.122). Husserlian traces are afforded material and temporal durability in the digital network. In the material documentation of ephemeral live performance, it is noted that representations of the ephemeral ‘contain something of the thing itself... which are not the thing itself’ (Reason, 2006, P.232). The unstable ephemeral, in ephemeral ways, endures.

4.5 A Framework of Ephemeral Dimensions and Characteristics

The dialectical tension (Van de Ven and Poole, 1995) between ‘ephemeral’ being short-lived *and* durable is not, in our view, a condition to be resolved but rather that condition which epitomises the ephemeral. This *logic of opposition* (Boudreau and Robey, 1999) identifies the ephemeral as short-lived and durable by incorporating repetition and recombination. Below, we characterize the ephemeral through the four dimensions of Yoo’s (2010) schematic for experiential computing: space, time, artifacts, and actors. We consider the schematic appropriate for three reasons. Firstly, experiential computing is concerned with ‘computing in everyday life experiences’ (*ibid.*). The ephemeral is that which is processed and encountered in the everyday (Guillaume & Huysmans, 2018). Secondly, experiential computing describes a spatiotemporal context ‘that is temporary and unfolds over time’ (Yoo, 2010). The material and temporal ephemeral is both short-lived and distributed in space and time. Thirdly, we consider the schematic an appropriately broad structure for conceptualizing the ephemeral in IS research.

Table 1. Conceptual Framework of Ephemeral Dimensions and Characteristics

Ephemeral dimensions	Ephemeral characteristics			
	Short-lived	Repetitive	Recombinatory	Unstable, Durable
Time	<i>Speed:</i> of change <i>Compression:</i> of and to the present time <i>Limitation:</i> by transience, disappearance	<i>Repetitive:</i> recycling of past in repetition; ephemerality increased through repetition <i>Anticipated:</i> looks to future repetition <i>Varied:</i> present stabilized in variation of past	<i>Recombinatory:</i> repurposing of past in present; repurposed present sufficiently different to past; repurposed time disordered <i>Multiple possibilities:</i> future is open, uncertain	<i>Unstable:</i> emergent, volatile, non-linear, fragmented, fleeting temporal traces <i>Durable:</i> duality of ephemeral time as short-lived <i>and</i> durable/ ‘eternal’

Space	<i>Speed:</i> of spatial transformation <i>Compression:</i> of space and the present time <i>Limitation:</i> of spatial value, use, and relevance	<i>Repetitive:</i> recycling of space; ephemerality increased through repetition <i>Anticipated:</i> ephemeral will be repeated in the space <i>Varied:</i> present space stabilized in similar variation of past	<i>Recombinatory:</i> repurposing of space that is sufficiently different to past use or form of the space <i>Multiple possibilities:</i> future ephemerality of the space is open, uncertain	<i>Unstable:</i> short-lived spatial limitations <i>Durable:</i> ephemeral materialized and extended in space through repetition and/or recombination; endurance catalyzed by being short-lived
Artifact	<i>Speed:</i> of material production, circulation, and consumption <i>Compression:</i> of material value, use, and relevance <i>Limitation:</i> of social and technical functions	<i>Repetitive:</i> recycling of artifact; ephemerality increased through repetition <i>Anticipated:</i> ephemeral will be repeated through the artifact <i>Varied:</i> present artifact stabilized in similar variation of past	<i>Recombinatory:</i> repurposing of artifact that is sufficiently different to past use or form of the artifact <i>Multiple possibilities:</i> future ephemerality of the artifact is open, uncertain	<i>Unstable:</i> short-lived material limitations <i>Durable:</i> ephemeral materialized and extended in artifacts through repetition and/or recombination; endurance catalyzed by being short-lived
Actor	<i>Speed:</i> of perception, experience, agency <i>Compression:</i> of perception, experience, agency to the present time <i>Limitation:</i> of perception, experience, agency to the present time	<i>Repetitive:</i> recycling of agency, experience; ephemerality increased through repetition <i>Anticipated:</i> looks to future repetition of agency, experience <i>Varied:</i> present agency, experience stabilized in variation of past	<i>Recombinatory:</i> repurposing of perception, experience, agency that is sufficiently different to past perception, experience, agency <i>Multiple possibilities:</i> future ephemerality of perception, experience, agency is open, uncertain	<i>Unstable:</i> short-lived limitations of perception, experience, and agency <i>Durable:</i> ephemeral embodied and extended in perception, experience, and agency through repetition and/or recombination; endurance catalyzed by being short-lived

4.6 A Definition for Ephemeral

Out of our review and framework, we propose the following definition for ‘ephemeral’:
the ephemeral refers to unstable times, spaces, artifacts, and actors that are both relatively short-lived and repetitive, recombinatory, and durable.

5 Conclusion: Situating the Ephemeral in an IS Context

Ephemerality can help describe the diverse, fast-paced, and unstable contexts for transfer and diffusion of digital technology. For example, the periodicity between major innovations in traditional theories of diffusion (e.g.: Rogers, 1963) is less plausible in ephemeral conditions where innovation, adoption, and diffusion can quickly be undone (e.g.: SEJ.com, 2019). Even if delays remain determinable, they are compressing because of accelerating innovation (Heylighen, 2007). As cited in section 1, ephemerality is referenced in multiple IS contexts, including digital transformation (Mousavi Baygi et al., 2021) and social media (Urquhart & Vaast, 2012). Dictionary definition of ephemeral, together with study context, implicitly informs most IS reference to the term.⁵ This is problematic, as we outline below in the context of social media.

In IS social media research the ephemeral is routinely conceptualised as short-lived only (e.g.: Morlok et al., 2017; 2018; Browne et al., 2017; Xu et al., 2016). The degree of ephemerality is subsequently determined by the perceived duration of the singular ephemeral event, with shorter timespans denoting ‘stronger’ ephemerality and vice versa (Morlok et al., 2018; Xu et al., 2016). Through this lens, a three-second Snapchat ‘snap’ is more ephemeral than a ten-second ‘snap’ (Morlok et al., 2018). However, the ephemeral characteristics of repetition and recombination attune us to ephemeral durability, with practical implications for how ephemerality is described in research and design. That ephemeral social media content is, for example, subject to screenshotting, is characteristic of ephemerality, and not its conceptual ‘other’.

However, the short-lived-only conceptualization sees the ephemeral set against, rather than containing, its perceived opposite: persistence or durability (Xu et al., 2016; Faik et al., 2020). Too rigid categorization accommodates excessively technical conceptual approaches to sociotechnical problems, whereby ‘ephemerality is perceived as a technical remedy’ *for* its perceived opposite (Morlok et al., 2018). Ephemerality is not merely ‘an artificial technical restriction’ (Morlok et al., 2017). Ephemerality-based IS research must necessarily address durability as constitutive of the ephemeral.

Unchallenged assumptions around the meaning of ephemeral result in a social media literature base that is user-centric, focusing on user characteristics, rationale, and experience in relation to ephemerality-based platforms at the expense of the ephemerality concept. Users, however, are very much ‘cogs in a machine’, and increasingly ‘part of the applications that emerge and disappear’ (Kreps & Kimppa, 2015). The behaviours and experiences of people should not be offset against ephemeral technical affordances but factored into conceptualisation *of* the ephemeral.

In conclusion, systems of people and technologies are reformulating the nature of the ephemeral. We suggest that the unstable ephemeral is not only short-lived, but also repetitive, recombinatory, and durable. In their organizational study of subjective time, Shipp and Jansen (2021) note the importance of ‘studying the past, present, and future simultaneously.’ The ephemeral as characterised here offers such an opportunity.

⁵ Notable exceptions include conceptual association of the ephemeral with malleability (Yoo, 2010; von Briel et al., 2018), editability (Kallinikos et al., 2010; 2013), fluidity (Lytinen, 2021; Ahuja & Choudhury, 1999), and performance (Marabelli et al., 2016).

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