Ethnographic Temporality: Using Time-Based Data in Product Renewal

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Corporate ethnography is often targeted at renewing the life of a product. Getting customers to start using a product again – or start using it in the first place – entails a deep understanding of the rhythm of everyday life. When do customers begin to use this product? When do they stop? What else is going on during this time? It is tempting to rely on the automatically collected time-data from "big data" analytics to answer this question. But ethnography offers a unique cultural lens to understanding the temporal aspects of the product lifecycle. In this paper, I provide examples of technological products that demonstrate how ethnographic insight offers deeper insight about the temporal aspects of products. I introduce the concept of the "timescape" and its three dimensions of time, and explain where some products are temporally successful and others temporally fail. I explain in the final portion of this paper, I outline ways in which digital time-data should complement traditional ethnography.

AN INVITATION TO RENEWAL

Products go in and out of style. Some become obsolete, others become déclassé. Understanding the ways in which people start and stop using a product is a challenge for researchers. Today, this question is often answered using readily available transactional data. A user signs onto Netflix at 5:55 p.m. A user signs off at 8:32. A user signs on again at 10:45. These automatically collected time-data present a tantalizing opportunity to breath new life into flagging products. Good products leverage an understanding of users' temporal context. The users' "timescape" comprises three dimensions: time of use, timing of use, and tempo of use (Adam, 1990). I would argue that products that match a user's timescape have a better chance of uptake, all things being equal. But, as I also argue in this paper, digital time-data, taken alone, fail to provide adequate insight into *why* users use a product, because these data lack holistic "understanding," or as Weber (1978) might say, the "verstehen" of temporal context. This sort of understanding is the systematic interpretive process of analyzing a social phenomenon.

Ethnographic research is ideally suited to understanding a timescape, though it can and should be coupled with these ample and robust quantitative time-data that are now easily accessed. So-called "Big Data" is not a threat to ethnography so much as a complement. In

the final portion of this paper, I suggest ways to mix Big Data with ethnography to produce insightful results about the temporal aspects of product design.

TEMPORAL CONTEXT AND SUCCESSFUL PRODUCT DESIGN

Good products are those that match the values of their target consumers (Martin, 2009). For a product to be a "good cultural fit," it must match any number of cultural values of its users, including language, aesthetic preferences, and the setting of collective priorities. A good cultural fit hinges, in part, on the product's ability to match the rhythm, cadence, and tempo of its users' everyday life. This jibes with established theory of culture; theorists assert that "time orientation" is a central defining feature every culture (Kluckhohn, 1953) and permeates wider systems of symbolic communication and political economy (Lefebvre 2004). Cultures with "future orientations" are aspirational, while those with "past orientations" venerate past accomplishments. Understanding this time orientation can be used for better organizational design (Gallagher, 2001) and, as I argue, for better product design. Time and its cultural enactment structures how people adopt and use products. Products fit (or do not fit) into a culture. The temporal aspect of product use is a key aspect of that fit.

Product designers that understand their users' temporal experience have a distinct advantage over those that do not – their products are more easily integrated into consumers' everyday lives. Well designed computer technology, for example, has an "calm" quality, which means it is apparent and readily available when it is called upon and "disappears" when its task is completed (Weiser, Gold, and Brown, 1999). A technology's "calmness" is a socially defined characteristic, as it is dependent on how users react to its appearance. "Calm" technology appears when the user wants it to. In Heideggerian terms, a "calm" technology is "ready-to-hand," that is, it is known by its user through its use. It is used easily and without conscious awareness or frustration. Researchers (Dotov, Nie, and Chemero, 2010) have recently found evidence that an "un-calm" technology draws attention to itself through its poor usability, thereby offering empirical evidence of Heidegger's original thesis.[1] Technology that pops up when unexpected or does not respond when asked is out of step with its users temporal context. Users expect good technology to match their timing.

Products that get this timing right have a better chance of delighting their users. In some cases, successful products correct temporal mismatches inherent to other products. For example, TiVo solved the temporal disruption of television itself. Television executives once dictated "appointment television" to the audience, setting the times for shows and requiring the audience to match those times. Appointment television disrupted household

[1] Cognitive scientists 3/8/2023 11:40:00 AM have recently found experimental support for Heidegger's thesis by testing technology users' awareness of a mouse that has poor usability. They conclude that ready-to-hand is the default state for technologies that are well designed to match users contextual needs, including temporal expectations of responsivity. They also use the term "unready-to-hand" to describe products with poor usability, though Heidegger may disagree with this terminology.

rhythm by requiring families to be in front of the television at the precise time the show was on, regardless of what else might be happening in the household at that time. All this changed when the ability to digitally record a show allowed television watchers to match entertainment to their personal household rhythm.[2] Families could schedule activities without missing their favorite shows. The TiVo as a technology quietly does its work in the background, and when asked, produces content its users want to see. It is ready to be used when its users ask it be. TiVo's quick uptake is explained, in part, by its temporal design principle: users' temporal context dictates when content is watched.

But product designers can just as easily get this temporal dimension wrong. Consider the amazing product flop WebTV. WebTV was designed to be "thin client" or stripped down Internet-access device. Users were able to connect the device to their existing television and, using their existing telephone line, dial into the Internet. The big promise of WebTV was that its users could "interact" with or even purchase products featured on television in real-time. Users could potentially watch television, do research on their favorite stars, or most tantalizingly, shop for products featured on shows. This was a temporal mismatch. Television watchers routinely look up products while watching shows, but *they do not do so on the same device, at the same time.* Individual family members may discretely Google a product on their personal device while watching a television show, but they will not do so on the television screen. Families shop together and they watch television together, but they do not do both things together at the same time. WebTV failed to see how activities are layered and organized within a web of existing social patterns.

What went wrong with WebTV? What went right with TiVo? WebTV's failure was not so much a technological problem, but a social one. Its designers failed to situate "watching television" within the wider cultural and temporal landscape of family life. Some family members may wish to interact with products on a television, while others may wish to simply watch the television. This case demonstrates that fitting a product into everyday temporality is a far more nuanced and subtle design process than appears at first glance. Adam's (1990) notion of the "timescape" provides an analytical roadmap for time-based design principles. She asserts that time has three key aspects: time (how and when activities start); timing (the synchronization of activity with others); and tempo (the pace of activity).[3] Successful products match users' time orientation and provide affordances for it. When does an activity begin and how might the product be readily available for that time? With whom is an activity synchronized, and how might the product allow for other activities or people? How fast is

[2] Granted, the VCR allowed television watchers to tape shows long before the TiVo. The TiVo, however, had all the advantages of a an information communication technology: its near "bottomless" storage ability in a small space, its programmability, and its networked connection to other data such as personal preferences. A full examination of the differences between the VCR and the TiVo are outside the scope of this short paper.

[3] Adam notes a fourth aspect: temporality, or the phenomenological imprint of timespace on a product or activity. This fourth dimension refers more to the metaphysical nature of objects.

the activity performed and what affordances does the product have to match that pace? Products that meet these criteria are more likely to be rewarded by quick uptake and higher user satisfaction. Designing for the timescape can thus be thought of as one aspect of the overall quality of user experience, along with usability, intelligibility, and aesthetic preference. Successful products do not disturb an existing timescape, but rather fit within it. In the case of TiVo, its designers recognized that appointment television created an artificial beginning to "watching television," and that viewers would sometimes prefer to change that start time. WebTV failed to understand the "timing" or synchronization of activities. A group of users cannot simultaneously watch television, shop online, and check email all on the same device. TiVo lets users start watching television when they want. WebTV expected its users to shop with their family members while watching television – something they did not want to do.

Timescapes can change. Woe be the hapless product designer that fails to see shifts in the timescape because this is how products become obsolete. A changing timescape represents both an opportunity and also a threat. When timescapes change, new products can be introduced but these new products must keep pace with shifts in temporal activity. Research In Motion, for example, recognized that the widespread adoption of desktop-based email also created a new set of consumers who needed immediate access to information. They answered this need with the first BlackBerry. Immediate reception of a new email became a design priority for the BlackBerry, one that differentiated it from competitors (Martin 2009). At that time, BlackBerry was the only product that matched users' immediate communication needs, but particularly those who work in the finance industry. The ability to immediately communicate was a competitive advantage that could even be quantified into dollar figures (which in some cases could be quite substantial thereby justifying the relatively high cost of the original BlackBerry service). RIM capitalized on this new tempo of communication.

But the timescape has shifted once again, and RIM has failed to adjust its products. The BlackBerry's recent challenges are due, in part, to a failure to see a shift in the timescape; research has found that the *tempo* of email has changed. It is becoming more of an archiving system rather than an immediate communication channel and is also being replaced with various other social media messaging (Gwizdka 2004; Ostrow 2009). Even BlackBerry Messenger is preferred over email for immediate communication by BlackBerry users themselves (Ladner & Butler, under review) But its makers continue to tout the BlackBerry's primary design feature as immediate email. This is was once a competitive advantage but the nature of the timescape has changed.

RIM could conceivably renew its flagship product by focusing on the timescape. Attending to the temporal reality of users is a direct path toward renewing old products. What kinds of simultaneous activities do users want to do that they cannot with today's mobile devices? When do they want to start or stop using a mobile device in ways that are not currently possible? What kinds of activities (besides email) have a faster tempo now, but no attendant functionality on today's devices?

THE PROMISE OF BIG DATA: AUTOMATIC TIME-DATA

How can we understand the timescape in order to renew existing products? There are promising new methods to gather this kind of insight, which ethnography can exploit and build upon. Witness the advent of "Big Data," or the massive collection of user information that is more or less automatically collected by various digital products, and digitally networked. Today, time is increasingly revealed through digital technologies such as smartphones and Google Calendar (Ladner, 2009; Sell, 2008). These technologies count time with precision; they do not merely mark its passage. They make it remarkably easy to collect time-based data, through the collection of "time-stamps" on all manner of digital artifacts. But this digital representational form is also low fidelity. It is devoid of character. It has no handwritten annotations. It speaks in faceless fonts and nondescript digits. Digital time is precise, but at the same time, inhuman. It therefore reveals little about consumers' temporal understandings of the world.

Big data is more than simply data; it is the promise of automatically collected insight. At first blush, Big Data holds a mouth-watering allure of insight for those who study people and technology, as Boyd and Crawford point out: "Big Data tempts some researchers to believe that they can see everything at a 30,000-foot view" (Boyd & Crawford, 2011, p. 2). Indeed, this temptation plays out in industry, as Slobin and Cherkasky (2010) detail in their case study. They argue that Big Data paints a reductionist picture of the actual customer experience while at the same time appearing to offer deep insight into the temporal ordering customer experiences. They give the example of a client who insisted that purchase history and transactional data gives them a "360 degree view of the customer." The entire customer experience, their client argued, "is reducible to the measurement and tracking of this behavior across digital channels" (Slobin & Cherkasky, 2010, p. 193). Certainly it is relevant where and when the customer interacts with a product. But knowing mere "time stamps" of these activities offers little deep insight into where, when and why a customer starts or stops using a product. Big Data may allow time-data to portray a view of the customer, but it is a culturally illiterate portrait.

Worse, this representation of time by Big Data is frequently wrong. Digital technologies frequently fail to measure time correctly, in part because programmers themselves take short-cuts in their code. Programmer Noah Sussman (2012) has catalogued no fewer than 122 "falsehoods programmers believe about time" in his two blog posts on the subject. For example, "the server clock and the client clock will always be set to the same time" is an assumption programmers might make, according to Sussman, making it easier to record the supposed time a customer's client's computer accesses a web server but this record will often be incorrect. The ways in which Big Data presents time-data obscures this error.

The nuance of what time means and the potential errors have been made in recording it are all hidden in digital time-data. This is the very nature of quantitative data; they obscure the methods used to collect them. At heart, then, the real issue is an epistemological one. What can Slobin and Cherkasky's (2010) client really know about when her customers use

her product, based on transactional data alone? Can she ever explain why a customer stops using her product? Or what it may take to entice that customer to use it again? In other words, can she offer an interpretation of the customer's actions in a way that analyzes and explains them as a social phenomenon? The time-use data may never reach the level of interpretive fidelity that Weber exhorts us to achieve.

Essentially, these are all "why" questions, which are historically answered by qualitative methods in general and ethnographic methods in particular (Creswell, 1994; Esterberg, 2002). Time is not simply a quantitative phenomenon; it is also a cultural one. Designing a product for this environment hinges not solely on what time the clock says, but the rhythms of social interaction that are reflected in the time, timing, and tempo of activity.

Lived temporal experience is symbolically rich and subjectively vivid. It is governed by the imperfect and subjective functioning of our brain (Csikszentmihalyi, 1990). We can only roughly discern the passage of hours or minutes, while seconds slip past our consciousness, barely perceptible. This does not mean that time does not pass in minutes and seconds, but that these measures are not the sole system of reckoning our minds use to make time intelligible. The human mind is a poor counting machine, but it is a spectacular creator of symbols. The human mind's inherent ability to discern patterns hinges upon its metaphorical reasoning (Dreyfus, 1992; Lakoff and Johnson, 1999). Human cognitive synthesis functions largely based on stories, myths, and implicit schema. Digital time-data has none of this nuance. It is a plain, reductionist representation of time. Digital time-data can be a "correct" measurement of time (when programmers do not fall victim to false assumptions, that is), but it is a complement to our collective, metaphorical and conceptual notions of time. Timescapes can be measured but they must also be conceptually understood.

TEMPORAL CONFUSION

What does this automatic collection of time-data imply? We are currently experiencing a phenomenon I call "temporal confusion," which is endemic to 21st century life. Temporal confusion refers to the widening gap between time's contemporary representational form, i.e., digital representation, and our lived temporal experience. As I noted above, our minds create vivid symbolic representations of time, yet our time-measurement tools lack this kind of symbolic fidelity. What does it mean that life is revealed to us increasingly through low-fidelity digital technologies, such as Google Calendar? What might this suggest for culture in general, and applied anthropology in particular?

Digital time tools make time appear as if it were a collection of measurements. This kind of time-data look and feel like mere "numbers" and strip time of the high-fidelity of lived experience. 10:22 p.m. does not look significantly different than 11:38 a.m., but they are fundamentally different times. This rendering of time distances it from the lived experience of time, which includes cultural touchstones such as "lunch time" or "bed time" or even "banana time" (Roy 1959). A Monday morning in January is drastically different from a

Friday afternoon in June, but digital time-data contain none of these cultural nuances. In other words, the *quality* of time is obscured by its *quantity* when we use digital time-data. In the digital representation of time, all time appears to be the same. But our lived experiences tell us that all time is most definitely *not* the same. Temporal confusion refers to this gap between how digital time-data represent time and how we actually experience it.

Temporal confusion is perception that "all time is equal," when it clearly is not. The gap between the flat representation of time and its vivid lived experience could actually contribute to our pervasive sense of busyness. When all time appears to be "the same," it is much easier to see time a resource to be used. "Bed time" means more than just 8 p.m. on Tuesday; it means spending precious time with children. When time is simply a series of low-fidelity digits, however, it becomes easier to schedule more activities. This is what Heidegger meant when he said that technology "enframes" phenomena as represents them as "standing reserve."

GUIDELINES FOR USING DIGITAL TIME-DATA VERSUS ETHNOGRAPHIC TIME DATA

But we should not throw out the baby with the bath water. Digital time-data offer a wonderful opportunity to gather insight, and to free the researcher to conduct more nuanced cultural analyses. I argue that we should allow computers to do what they are good at: perform mundane and repetitive tasks that human minds rarely do without error. Allow Big Data to collect information on the whens and how longs of time, timing and tempo, while ethnographers collect data on the hows and whys of time, timing and tempo.

This approach is similar to Anderson et al's (2009) work on visualizing digital time-data. In their work, they relied on computers to collect data about users' computer usage. Interestingly, these visualizations were then used to elicit conversations with users about their time-use, and specifically, about synchronized activities, or what Adam would call the "timing" of activities. Time-use scholars have a robust debate about simultaneity that simply cannot be answered through quantitative data alone; this is where the ethnographer's observation of the hows and whys of simultaneous activities can lend nuance and richness to the quantitative data. Such insight would likely have revealed that television watchers are unlikely to begin "shopping" on a shared television device.

Ethnography remains a key method in ways to renew product design. We can count time more easily and precisely than ever before, but time is more of a cultural phenomenon than a quantitative one (TenHouten 2005; Adam 1990; Bergmann 1992). For this reason, ethnography should complement automatically collected time-data.

Gibbs (1998) points out that product designers unfortunately often have a narrow conception of what he calls the "consumption act," which should include the entire consumption process from consideration, to purchase, to use. Ethnographic research is

ideally suited to uncovering more holistic conceptions of the "consumption act." It can answer questions that are key to uncovering potential product renewal opportunities. For example, what comes first? Who should get "first dibs"? Who actually does? How has this changed over time? The answers can provide road maps for new product features, or entirely new products.

Renewal of products like the BlackBerry, for example, can be achieved if designers and ethnographers pay attention to the cultural nuances of time, while computers offer them working hypotheses of where contradictions may occur.

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