

Capstone Project - Spring 2015

Fractal Identities - Annotated Bibliography

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Annotated Bibliography “Fractal Identities” Capstone Project

Introduction: Evolution of a Concept

This project centers on *fractal identities*, a concept inspired by the second chapter of Douglas Rushkoff’s book *Present Shock: When Everything Happens Now*, entitled “Digiphrenia: Breaking Up Is Hard to Do.” In that chapter, Rushkoff discusses the stress and difficulties (“digiphrenia”) that arise when people try to keep up with many digital persona or presences at once, e.g., smart phones, Facebook, online chat, texting, social media, and e-mail, all at once. Building on this idea of *digiphrenia*, I developed “fractal identities,” the numerous identities or presences that stem from a single analog identity that has “gone digital,” i.e., the numerous or multiple identities a person forms when being in multiple places at the same time when using digital or online technology, in essence, when *multitasking*. Eventually, I would build on and give more direction to *fractal identities*, but this basic conceptualization as “multiple identities” would serve as a working definition for the project’s launch. The final incarnation of the project is on the *Fractal Identities: When Analog Self Meets Digital World* blog: <http://makman13.wix.com/fractalidentities>.

Methodology

With this rudimentary concept in mind, I began to search library collections and databases to find articles and research that could add definition and help flesh out *fractal identities*. In addition to the [McDermott Library catalog](#), I looked at [Mass Media databases](#) and databases related to technology such as [ACM Digital Library](#), [IEEE Xplore](#), and [Elsevier’s Science Direct](#), home of numerous academic journals on human/technological interaction such as [Computers in Human Behavior](#).

To begin my search, I had to avoid using the phrase “fractal identities” or “fractal self.” That is, I did attempt searches on those two phrases. However, I was inventing a new concept or at least a new interpretation of an old concept, which meant searches of the original phrase yielded no relevant results. Instead, I began with the following terms and phrases:

“multiple identit” AND (online OR “social media” OR digital)*

The “*” serves to truncate a term to find all its variations, e.g., *identit** for *identity* and *identities*.

This first set of terms led me to literature about virtual identities, avatars, and alternate identities. While these items are interesting concepts and capture certain aspects of *fractal identities*, they were not entirely what I had in mind for *fractal identities*, even if that meaning was still nebulous. With *fractal identities*, they were less of a conscious or deliberate phenomenon as suggested by “avatars”

(videogame and virtual reality), i.e., they were not necessarily a radically different identity deliberately invented by the originating self, even though I did not completely rule out that possibility. "Avatars" captured one possibility for *fractal identities*, but in a very narrow sense. Eventually, I would come across the idea of alternate and multiple identities across other platforms (not just in gaming or on Second Life) as well as literature on virtual identities, but more searching was needed.

Moving onto the concept of *alternate identities*, while in some ways it was tangentially connected to my concept, the phrase suggested identities formulated for the purpose of deception or criminal activity. *Fractal identities* can in some sense be alternate identities, but the articles I encountered were more concerned with alternate identities for the purposes of identity theft or other less innocuous activities. This way of conceptualizing *fractal identities* did not capture the spirit of the phrase I had in mind, but this search did generate some useful material when carefully filtered for the irrelevant "criminal" identity materials.

For the next set of searches, I decided to return to the concept that inspired *fractal identities*, that of Rushkoff's *digiphrenia*:

The tension between the faux present of digital bombardment and the true now of a coherently living human generates [a kind of] present shock, what we're calling *digiphrenia* -- *digi* for "digital," and *phrenia* for "disordered condition of mental activity."
(*Present Shock*, p. 75)

Fractal identities could not stand on its own, be spun from nothing. It required connecting it back to its source material, the Rushkoff book, and in particular, *digiphrenia*, or so this strategy directed me. A major source of *digiphrenia* is time management, or rather lack thereof, as the digital media user finds him-/herself juggling too many tasks at once, e.g., texting, e-mail, phone calls, and so on. With the issue of *digiphrenia* in mind, I reformulated my next search as follows:

("digital media" OR "social media") AND ("time management" OR (temporal disconnect*))

This search led to materials on Internet addiction, distraction, self-regulation, concentration, and *multitasking* (success or failure). This last term tied directly to Rushkoff's work and addressed his concerns with online users dividing their time and stretching their attention spans thin with too many tasks. I found and documented some material of interest here, but very little of it could be tied to identity formation. Indeed, an individual can have multiple accounts on multiple platforms and attempt to manage many or all of them at once, but multitasking *per se* did not have much to tie it to *fractal identities*.

Finally, my search took a huge shift as I got feedback on the status of the *Fractal Identities* blog and the various challenges I declared in my efforts to define this concept with more specificity. I discovered the work of noted sociologist Erving Goffman, who declared identity or self-disclosure as a (public) performance. I went to task finding material that updated his theory as it applied to a heavily technologized, online world, in other words, how self is formed and defined in relation to technology. I was also directed to science, technology, and feminism scholar, Donna Haraway, most notably her *Cyborg Manifesto*. Although this particular work proved very difficult and abstruse, it along with a many years' later interview with Haraway opened my eyes to new thought on human relations to technology (and other organisms), postmodernism, and, to some extent, identity. The effort put into updating Goffman and extracting intelligible meaning from Haraway (her core essay is, to put it bluntly, inaccessible) ultimately led to the works of Sherry Turkle, prominent social psychologist and media scholar who has written extensively on issue of identity, science and technology, and our relationships with technology. While Turkle is not the ultimate authority on identity with respect to technology, I found her work proved most relevant and informative on *fractal identities*. In fact, while much of the thought I was formulating on *fractal identities* seemed new, I discovered that Turkle in many ways had covered much of the same ground. Yet, *fractal identities* does bring some new research and perspective on identity in online environments.

Concluding Remarks

The following bibliography documents the materials used in informing the *Fractal Identities* blog (<http://makman13.wix.com/fractalidentities>), but many entries also stand on their own as testaments to the thought process and mental exercises that went into the formation - one that defies closure or any kind of a neat and tidy ending - of the emergent, still-evolving concept (what Donna Haraway would call a "*thinking technology*") that is *fractal identities*.

Aboujaoude, E. (2011). *Virtually you: The dangerous powers of the e-personality*. New York: W.W. Norton.

Dr. Aboujaoude's book chronicles the many pitfalls or pathologies of the "e-personality," a phrase he coins for the personality users adopt when they are transformed by online technology and media, that is, when they get lost in their virtual lives via places such as the Internet, video games, and smartphones. He takes a decidedly critical stance on online technology, noting through anecdotes and studies how it often leads to narcissism, compulsive behavior, proneness to distraction, and addiction, to name a few of the "disorders." The "disinhibition" that many would classify as empowering – i.e., loss of anxiety, increased confidence or boldness, and dissolution of social boundaries that impair the "performance" of identity building (to use a concept coined by Erving Goffman) – when one goes online, Aboujaoude would classify as "potentially destructive" and "psychologically devastating." While the author's emphasis is on the negative consequences of technology on identity, his concept of "dissociative identity disorder" (and update of *multiple personality disorder* in the *Diagnostic and Statistical Manual of Mental Disorders*) resonates with *fractal identities*. He suggests there is a schism between one's offline and online personalities that give rise to *parallel identities*, a dichotomy or multiple identities often in competition or at odds with one another. His insight brings a new perspective to *fractal identities* that I had not considered before, that is, not only can digital media make way for multiple online identities, but how those identities can impact each other, especially one's offline identity.

Attrill, A. (2012). Self-disclosure online. In *Encyclopedia of cyber behavior* (chapter 71). New York: Routledge. Retrieved from

http://utdallas.primo.hosted.exlibrisgroup.com/UTDALMA:UTD_ALMA51164466950001421

Attrill examines the nature of self-disclosure (SD) as it is manifested online and off-, described here as self-revelation or "[the] revealing of information about the self to others." She builds on decades of previous scholarship on the topic, e.g., S.M. Jouard's *The Transparent Self* and E. Goffman's *The Presentation of Self in Everyday Life*, to reveal how online technology has enhanced, accelerated, and, in certain respects, fundamentally changed the nature of SD. Some of the negative consequences of online SD, such as the potential loss of privacy and cyberbullying, are briefly discussed. For the most part, Attrill's take even-handedly explores the positives and negatives of online SD. It concludes that blogging and SNS (social networking sites), where most online SD occurs, typically lead to positive outcomes for the actor/individual: solid senses of well-being, self-presentation, and relationship management. On balance, impression management benefits from online SD.

Credit goes to this article for elaborating on Goffman's theory of putting the self on display, i.e., self-disclosure as (dramatic) performance in online or virtual environments and for providing a launchpad to additional research on the topic. Attrill deserves additional credit for suggesting where future research may concentrate its efforts, for example, proposing SMSM

(“self-memory-system model”) as a new model for theorizing how voluntary SD unfolds online. New theories and models on online self-disclosure are lacking, and *fractal identities* may provide a new, albeit imperfect paradigm on the topic.

Bargh, J. A., McKenna, K. Y. A., & Fitzsimons, G. M. (2002). Can you see the real me? Activation and expression of the “true self” on the internet. *Journal of Social Issues*, 58(1), 33-48.

doi:[10.1111/1540-4560.00247](https://doi.org/10.1111/1540-4560.00247)

In this study, the authors conducted three experiments to test the type and extent of self-disclosure in online versus face-to-face transactions and the benefits conferred. Not surprisingly, online spaces facilitated faster and fuller disclosure of the “true self” than offline or face-to-face transactions; the “actual self” tends to be more readily accessible (accessed faster) than the true self, regardless of the medium; and individuals tend to present more of their true selves in online environments than they do of their actual selves and experience an easier time “project[ing] their hoped-for qualities onto that partner” than in face-to-face transactions, resulting in quicker and more frequent relationships (p. 45). The “true self” is defined as the private inner self, the self that “exists psychologically” or unconsciously and “in the present” (as opposed to a future anticipated self), but is seldom and not easily expressed in social life (p. 34). The “actual self,” on the other hand, is defined as public self or persona (à la Goffman), the “conscious ego” or “public mask,” that is easily expressed in social contexts, but is seldom a complete or true reflection of an individual’s inner self (*Ibid*).

Besides exploring multiple versions of self in online and offline (face-to-face) environments, this study opened my eyes to a bevy of psychological and sociological theories on self and identity, from Erving Goffman and Carl Jung to Sherry Turkle. Most valuable was its emphasis on the concept of *true self* by Carl Rogers (1951) and how that is manifested in online and face-to-face interactions. As I have spent much of the project fixated on Goffman and his conception of identity as performance and impression management, that is, identity as wholly tied to the social environment, I have found how identity and self-conception/-knowledge stem from the more internal (characteristics I always suspected, assuming I have the correct interpretation), and they do not have to be conceived exclusively in a social context. While online environments can be playgrounds for identity exploration, i.e., places where individuals can invent entirely new identities with little to no connection to their true (inner) selves, these studies show what may be self-evident: more often than not, individuals *do* present their true selves in a variety of online environments, selves that hew close to their “real” or “inner” identities. Furthermore, people tend to present their true selves online in order to benefit from self-confirmation and build new, honest relationships. Bargh et al. warn that so seductive is the lure of new relationships in online environments (the “new friendship” effect), individuals should proceed with caution, being slow, careful, and deliberate in what information they divulge. Online environments make self-disclosure, be it “actual” or “true,” all too easy, and individuals should be aware that with easier self-sharing comes more dangers, too. With respect to this

project, the selves explored in this study add even more layers to the *fractal identities*, fleshing the concept out more completely, if not adding yet another layer of complexity.

Chester, A., & Bretherton, D. (2007). Impression management and identity online. In A. N. Joinson, K. Y. A. McKenna, T. Postmes, & U. Reips (Eds.), *The Oxford handbook of Internet psychology* (pp. 223-36). Oxford: Oxford University Press.

Chester and Bretherton examine impression management (also known as self-disclosure, the open social sharing of aspects of one's identity) in an online context and challenge early assumptions that when people go online, they take every opportunity to present the most idealized, most desirable, and "best" version of themselves (by implication, a deceptive version of their "true self"). They conclude that now that the Internet is so commonplace in university students' (people's) lives, they regard it not so much as a different world, but as a "transactional space embedded in everyday life" where the true self is more or less maintained (p. 235). Even in environments of fiction and fantasy (e.g., MUDs or multi-user domains), Chester and Bretherton found that the majority of the time, players typically adhered to aspects of their "real" or "true selves" and seldom did they explore the fluid and multiple identities these environments afford.

This reading provides an early (2007) foray into what happens to the self in virtual or online environments, i.e., it is not the one-sided assumption allegedly held by Aboujaoude or Turkle (even though I believe it misinterprets much of Turkle's thinking) that when given the chance, people almost always *perform* or project identities radically different from their "true" offline identities (e.g., adopt a new gender, age, body type, education, and personality) when going online. It provides counter-evidence that when identities go online, they generally preserve some level of authenticity. Perhaps these days, online technologies are so common that they have lost their mystique and allure as playgrounds for identity experimentation. Less effort, thought, and creativity is needed when "just being yourself" online. Furthermore, social networking platforms like Facebook and Twitter strongly encourage if not demand that their users act as their "true selves," leaving little room for alternate identity experimentation except for those die-hards determined to run counter to their prescriptions.

Gilbert, R., Thadani, V., Handy, C., Andrews, H., Sguigna, T., Sasso, A., & Payne, S. (2014). The psychological functions of avatars and alt(s): A qualitative study. *Computers in Human Behavior*, 32(0), 1-8. doi:<http://dx.doi.org.libproxy.utdallas.edu/10.1016/j.chb.2013.11.007>

This study explores multiple identities in online environments, that is, the management of identity-surrogates/avatars in a 3D virtual world, which, in this case, is Second Life. Gilbert et al. propose that "primary avatars (PAs) and alts (ALTs)" (alternative or secondary avatars) serve multiple "psychological functions ... within a multifaceted identity system operating across the physical and virtual realms." Some of the functions apply to the PA alone, e.g., extending or enhancing the PS's ("physical self" or offline identity/self) physical characteristics

and personality traits; others apply to the ALT alone, e.g., multiplying one's virtual presence for practical considerations, such as inventory management, social avoidance, or achieving anonymity; and lastly other functions apply to both the PA and ALTs simultaneously, e.g., diversifying one's identity by adopting an age, gender, race, or marital status different from one's offline identity. This study examines the numerous ways PAs and ALTs are used to explore, enhance, and propagate multiple identities online, and it concludes that many of these benefits (e.g., an improved sense of well-being) are conferred by the virtual environment (VE) back onto one's offline environment.

While this study concentrates on identity-building and play in one particular online environment, Second Life, I believe its observations and conclusions can be broadly applied to *fractal identities*, that its version of multiple identities provide more examples of *fractal identities*. Interestingly, this study veers away from the negative conclusions drawn by Aboujaoude, Rushkoff, and Turkle (in some instances), instead illustrating how online identities can take multiple forms that benefit rather than harm one's offline identity.

Haraway, D. J. (1999, 2004). Cyborgs, coyotes, and dogs: A kinship of feminist configurations. There are always more things going on than you thought: Methodologies as thinking technologies. An interview with Donna Haraway conducted in two parts by Nina Lykke, Randi Markussen, and Finn Olesen. In *The Haraway reader* (pp. 321-42). New York: Routledge.

Haraway, D. J. (1984, 2004). A manifesto for cyborgs: Science, Technology, and socialist feminism in the 1980s. In *The Haraway reader* (pp. 7-46). New York: Routledge.

Here is the main takeaway from "A Manifesto for Cyborgs":

Cyborg imagery can help express two crucial arguments [...]: first, the production of universal, totalizing theory is a major mistake that misses most of reality, probably always, but certainly now; and second, taking responsibility for the social relations of science and technology means refusing an anti-science metaphysics, a demonology of technology, and so means embracing the skillful task of reconstructing the boundaries of daily life, in partial connection with others, in communication with all of our parts. It is not just that science and technology are possible means of great human satisfaction [...]. Cyborg imagery can suggest a way out of the maze of dualisms in which we have explained our bodies and our tools to ourselves. (p. 39)

The cyborg - a merging, combining, and marriage of human with machine - relates to Sherry Turkle's evocative image as a "liminal moment," that which "[lives] at the border, in tension, transitioning to a new place where new meaning and transformation take place" (Turkle, *Life On the Screen*, p. 268). In this image, boundaries between technology and human-organism are crossed, blurred, experimented on, and tested, all of which may give way to new human

being. The cyborg also acts as yet another *evocative object*, that which inspires art, thought, and creativity in addition to invoking myriad emotions. Ironically, as groundbreaking as the idea may sound, cyborg - the merging or integration of technology with humanity - is a concept hundreds of years in the making. It took Haraway with her tone of irony and language larded with top-heavy academic diction and concepts to illuminate the cyborg and open the concept to new possibilities.

To borrow a phrase from Haraway's interview, "Cyborgs, Coyotes, and Dogs ...," conducted fifteen years after the penning of "A Manifesto for Cyborgs," *cyborgs* goes beyond being a mere idea, it is a "thinking technology" (1999, p. 335), a mental device to help enframe (to use a Heideggerian concept) enormously complex objects of inquiry, to "emphasize and de-emphasize, foreground and background" an object until it is comprehensible (*Ibid*).

"It is about explaining where real people are in the material-semiotic systems of technoscience and what kinds of accountability, responsibility, pleasure, work, play, are engaged, and should be engaged." (1999, p. 326)

I do not dare equate the concept of *fractal identities* with the theory of cyborgs as propounded above by Haraway. Simply put, *fractal identities* is a powerful metaphor for interpreting identity in the digital age. It is another conceptual tool - an evocative object - but it does not aspire to the breadth and scope of Haraway's cyborg manifesto. That being said, if *fractal identities* is anything like *cyborgs*, then it too is a "thinking technology" that aims to re-interpret the world, perhaps make better sense of certain aspects of it, and perhaps inspiring new creative endeavors, without insisting on coming to any reductive, simplistic, absolute conclusions. Haraway's manifesto and subsequent interview provide inspiration and fodder for considering the complex relationship between humanity and technology.

Heidegger, M. (1927, 1996). *Being and time: A translation of Sein und Zeit*. (J. Stambaugh, Trans.). Albany, NY: State University of New York Press.

Heidegger, M. (1954, 1977). The question concerning technology. In *The question concerning technology and other essays* (pp. 3-35). New York: Harper & Row.

Both of these works by Martin Heidegger defy facile summarization, but they are integral in the examination and questioning of being (BT), technology, and human-technological interaction (QCT). The topics they tackle would receive an updated treatment by Don Ihde in *Heidegger's Technologies: Postphenomenological Perspectives*. BT sets the foundation of philosophical inquiry by delving into questions about being (*Dasein*), the being of being (ontology and the ontological), phenomenology, and authentic and inauthentic being. QCT elaborates on themes not specifically addressed in BT, in particular, the question concerning technology and how that relates to being/Being. It focuses on the concepts of *building*, *dwelling*, and *thinking*, the

ground of being, and the very nature of technology itself.

While these books do not tie directly into *fractal identities* or the issue of identity in online environments (both predate the internet by several decades), they nevertheless provide the foundational texts on technology, humanity, and being in general. Rather than attempt to translate the concepts presented in these works to *fractal identities*, my project refers to them indirectly and, in a sense, obliquely. Heidegger provides a starting point and foundation in which to frame the larger questions about technology and their relation to being and “human-ness.” Perhaps most applicable are the topics of authenticity, inauthenticity, and modes of being, which are all emphasized, minimized, challenged, and enhanced with respect to self/identity online as well as offline, that is, authenticity, inauthenticity, and modes of being with respect to *fractal identities* in all the forms they take.

Ihde, D. (2010). *Heidegger's technologies: Postphenomenological perspectives*. New York: Fordham University Press.

Don Ihde takes on the monumental task of updating the philosophy of technology, that is, revisiting the father of the (modern) philosophy of technology, Martin Heidegger, and critiquing his work, *The Question Concerning Technology*. Ihde argues that Heidegger developed his philosophy primarily around the conception of mechanical technology and, to some extent, nuclear technology (energy and weapons), but it needs an update in light of the rapid changes and evolutions in contemporary technology (information and communication technology, nanotechnology, and biotechnology). Previous assumptions, assertions, and conclusions, he claims, no longer hold up or apply to today’s newer technologies. Heidegger and his writings continue to play a major role in the philosophy of technology, but they are no longer the final word on the subject.

Recognizing that while he is a very important figure in the philosophy of technology, I acknowledge that Martin Heidegger is by no means the final authority on the topic. I turned to Ihde’s book for a contemporary perspective on Heidegger and an update on the philosophy of technology. Naturally, I hoped what I found there I could apply in some way to *fractal identities*. Unfortunately, the demand on time for the “reward” that was yielded proved too much. After a tough and long slog of reading about one-third of Ihde’s book, I got no closer to better understanding of Heidegger, his philosophy of technology, or a contemporary update on the topic. My sense is that there is some degree of value to be mined from Ihde’s work, but it turned into a costly diversion in the end. Nevertheless, the book is worth noting, if anything, for its contribution as a new voice on the philosophy of technology.

Jin, S. A. (2012). The virtual malleable self and the virtual identity discrepancy model: Investigative frameworks for virtual possible selves and others in avatar-based identity construction and social interaction. *Computers in Human Behavior*, 28(6), 2160-2168.

doi:<http://dx.doi.org/10.1016/j.chb.2012.06.022>

Through the lens of an avatar-based virtual environment (VE), Second Life, this study presents different ways of perceiving online identities by proposing a new model, “virtual identity discrepancy model” (VIDM), to aid in analyzing “the psychological mechanisms underpinning avatar-based virtual self-representation and virtual communication” (p. 2161). The first part of the study starts by observing the processes involved in the digital identity construction of players’ avatars, establishing that far from being unified and homogenous, the virtual self is malleable, dynamic, and multidimensional. During this phase, the researcher measured virtual self-discrepancy, or the discrepancy perceived between the avatar-player’s actual (offline) self and the virtual self. The second half of the study examines “the influence of virtual other-discrepancy on social presence,” i.e., how the discrepancy between a player’s perception of the attributes of the virtual other and his/her perception of the actual other influences “social presence” or communication and social interaction in the VE.

Jin cautions against using the results to generalize about other online interactions or scenarios, because she operated strictly within the confines of an avatar-based virtual environment. Nonetheless, it appears safe to extract one broad inference, that is, in certain virtual environments (e.g., Second Life, MMORPGs,), identity can be and often is malleable and dynamic. As Jin states in this study, the malleable self exhibits a duality of stability and variability, that is, it “displays chronic identities” (i.e., fixed or persistent traits) and at the same time a “continually active, shifting array ... of selves” that has been granted by technology (p. 2161). This study serves as another case study in *fractal identities* - identities that are complex, malleable, and fluid that are rooted in the “actual,” the stable, and the persistent.

Junco, R. (2012). In-class multitasking and academic performance. *Computers in Human Behavior*, 28(6), 2236-2243. doi:<http://dx.doi.org/10.1016/j.chb.2012.06.031>

Junco, R., & Cotten, S. R. (2012). No A 4 U: The relationship between multitasking and academic performance. *Computers & Education*, 59(2), 505-514. doi:<http://dx.doi.org/10.1016/j.compedu.2011.12.023>

Both of these studies, one authored and the other co-authored by Reynol Junco, examine very similar phenomena and reach the same conclusion, that multitasking by college students for the most part negatively impacts academic performance. Both take into account the nature of the multitasking on ICTs (information and communication technologies, i.e., online technologies) and the extent to which they impact academic performance, that is, the benefit or detriment to grade point average (GPA). Time spent on social networking sites like Facebook and texting during activities such as classroom lessons negatively impacted academic performance, while “scholarly” multitasking, e.g., performing academic searches, had very little or no impact on academic performance. The studies speculate that the frequency to which students multitask and the nature of ICT use (socializing vs. researching) likely account for the discrepancies in academic performance.

Junco et al.'s articles bolster the assertions of Rushkoff, Turkle, and a multitude of researchers that humans process information best one item at a time, while suffering considerably at multitasking. While that observation may be stating the obvious, it appears the Junco studies take it a step further by examining the extent to which multitasking may or may not impact a measure of academic performance, GPA. These studies do not deal with *fractal identities* per se, except in that they may obliquely illustrate how the offline self or identity can at times suffer when its attention is focused on multitasking (Facebook, texting) in the middle of thought-intensive tasks (classroom learning).

Ko, H., & Kuo, F. (2009). Can blogging enhance subjective well-being through self-disclosure? *CyberPsychology & Behavior*, 12(1), 75-79. doi:[10.1089/cpb.2008.016](https://doi.org/10.1089/cpb.2008.016)

Ko and Kuo work from contemporary social theories on *self-disclosure* (SD) and hypothesize that when it takes place in online environments (in this case in the form of blogging), *social capital* is maximized (defined as the triumvirate of *social integration*, *social bonding* [strong relationship ties], and *social bridging* [weak relationship ties]), leading to increased *subjective well-being* (SWB). All hypotheses were more or less confirmed: deeper self-disclosure led to higher levels of social integration, social bonding, and social bridging experienced or perceived; greater social integration meant greater subjective well-being experienced or perceived; and the greater or stronger the social bonding and bridging, the greater the subjective well-being experienced or perceived. From their findings, Ko and Kuo extrapolate that online SD extends beyond the online environment, i.e., these three benefits of SD often reinforce existing (offline) relationships rather than diminish them.

While this study demonstrates how personality (self-disclosure) is enhanced in the online/virtual environment, leading to benefits enjoyed both online and off- (identity does not dwell solely in one environment or the other, but is a hybrid of both), it seems to be conveniently *too* positive in its findings. It fails to entertain any possibility of negative consequences of online communication, what Maghrabi et al. would deem *perverse social capital* (see below), or negative impacts on identity. Nonetheless, the study demonstrates how *fractal identities* are not simply binary (either/or, analog/digital, offline/online), but are a hybrid, fluid construct informed by interactions both offline and on-. Online environments are not worlds isolated from offline life (e.g., "What happens in Second Life stays in Second Life"); indeed, they can have profound effects (according to this study, very positive and self-affirming) that reflect back on one's offline activities. Multiple identities are not the focus here. However, whatever the makeup of one's identity, it is fluid in where it may operate, going seamlessly from offline to online to off-, as this study affirms.

Lehmann, J., Lalmas, M., Dupret, G., & Baeza-Yates, R. (2013). Online multitasking and user engagement. Paper presented at *CIKM '13: Proceedings of the 22nd ACM International Conference on Information & Knowledge Management*, San Francisco, California, USA.

519-528. doi:[10.1145/2505515.2505543](https://doi.org/10.1145/2505515.2505543)

Lehman et al.'s paper is an in-depth examination of users' browsing behavior, specifically, how online multitasking affects the ways users interact ("engage") with sites. These researchers chose to gather web analytics (e.g., how many users visited a site, time spent on pages, page views, etc.) on user behavior on a variety of websites (categorized as "news," "services," "shopping," "leisure," and "social"), noting in particular their click-streams or tree-streams (p. 521). Of particular importance, the researchers developed categories of online multitasking: **teleporting [T]** navigating without using a hyperlink, such as typing in a new URL or using a bookmark; **hyperlinking [H]** navigating from one page to another via hyperlinking; and **backpaging [B]** navigating to cached pages by using tabs or the back button (pp. 521-2). From these categories, the researchers measured site engagement through "stickiness," or how many times pages were viewed and the amount of time users dwelled on pages (p. 527). In the end, they formulate three custom metrics - *cumulative activity metric* (activity between site visits) and *activity pattern metrics* along with *attention shift* (information about what is happening on a site upon each revisit in terms of time spent and page views) - to address shortcomings in previous metrics, i.e., they describe browsing activity without accounting for multitasking specifically (p. 528).

This study provides insights into online multitasking *per se* with its categorization of behaviors (types of site navigation) and invention of new metrics for multitasking behavior (what users do between site visits as well as how often they return to a site and how long they stay there). What it does not address are the impacts these behaviors have on the users themselves, for example, what impacts such behavior have on users in terms of any intended goal by going online, focus or lack thereof in attention span, or ramifications for subjective well-being. Nevertheless, because multitasking, i.e., juggling multiple behaviors and activities, plays into the notion of *fractal identities*, this study provides good if not incomplete insight into how that multitasking is manifested. So much of online and communication technology behavior is defined by multitasking that to know what precisely constitutes it is insightful. It is not entirely haphazard, chaotic, or even purposeless. Rather, it is characterized by returning to the same spots or tasks and staying at them, moving fluidly back and forth from one task to the next, sometimes abandoning certain threads of action or tasks before they are complete, and sometimes building on or continuing other tasks, all while illustrating that multitasking at its core is a process of continuous creation and destruction of paths. *Fractal identities* follow remarkable parallels to multitasking, at once showing how multiple online identities can be created and destroyed, revisited and abandoned, orderly or chaotic, in a majestic ballet of artistry and mundanity.

Maghrabi, R. O., Oakley, R. L., & Nemati, H. R. (2014). The impact of self-selected identity on productive or perverse social capital in social network sites. *Computers in Human Behavior*, 33(0), 367-371. doi:<http://dx.doi.org/10.1016/j.chb.2013.08.015>

Maghrabi et al. examine how one particular affordance granted by technology - the ability to manage an individual's selected self-identity as measured through his/her self-monitoring and -manipulation (i.e., *strategic impression management*) - and how this behavior results in both *positive* and *perverse* social capital. The researchers observe how individuals' profiles on different social networking sites (SNSs) allow for "multiple variations on their identity" (p. 367). For each SNS with which an individual has an account or profile, s/he has the ability to project a different identity, even "multiple and co-occurring identities" (p. 368). Furthermore, the context of each site dictates the form these identities take. Consciously or not, SNS users will alter and adapt their online identities, highlighting preferable characteristics while deemphasizing undesirable ones à la Goffman's self-disclosure as impression management, in order to derive benefits such as reinforcing direct existing relationships (strong ties/bonding) or forging new indirect relationships (weak ties/bridging) within their social networks. Maghrabi and associates introduce several new perspectives on identity as it behaves online that prove most interesting. First, they illustrate how commonplace the fine tailoring and strategic crafting of personalities on SNSs. Through an evolving process of self-monitoring followed by enhancement or adjustment, followed by more monitoring, followed by more tinkering, and so on, SNS users continuously strike a balance between managing representations of what they are and maintaining representations of what they want to be (p. 369). All individuals will engage in acts of "self-enhancement" on SNSs - what others may call deception - to some degree in a bid to maximize positive social capital, that is, increase benefits gained through relationships in social networks (p. 368). But secondly and most interestingly, these researchers emphasize a consequence of SNS activity often overlooked by most previous studies, which is that not all SNS results in positive or productive social capital. *Perverse social capital* - negative consequences or those consequences that inhibit, restrict or constrain an individual's choices and actions - can and often do occur in SNSs. I feel that this study strongly confirms the concept of *fractal identities*. Identity in the online environment, in this case, SNSs, can be multiple and numerous without each necessarily being identical to the others, in a state of continuous flux, possessing coherence without being a static, monolithic unity. Rather they are tailor-made representations or performances for the purpose, in most cases, of some kind of benefit, that being positive social capital. Yet online communication technology is not presented as a one-sided affair as it seemingly appears in the Ko and Kuo article above. The consequences of online identity manipulation and performance are not always positive and rosy; identity tinkering and tampering, whether it is multiple or not, can lead to rather negative consequences for users, i.e., strategic impression management can be a double-edged sword.

Rushkoff, D. (2013). *Present shock: When everything happens now*. New York: Current.

Rushkoff's book functions as an update to Alvin Toffler's book, *Future Shock* (1970), which lamented that things were changing so fast that people were finding it difficult to manage.

According to Rushkoff, change is happening so fast thanks to high-powered information and communication technologies, not only is the future not in most people's purview, they are losing touch with the present. He divides the phenomena of *present shock* into five major struggles or issues: 1. Narrative collapse, 2. Digiphrenia, 3. Overwinding, 4. Fractalnoia, and 5. Apocalypso. Collectively, these struggles amount to a loss of goals and direction as well as an absence of deep, meaningful, personal connections for many heavy users of ICT. Besides expounding on each struggle in detail, Rushkoff offers practical advice on how individuals can combat those struggles in his/her life and reclaim his/her rightful *present*.

Fractal identities credits its origin and draws its impetus from the second chapter of the book, "Digiphrenia: Breaking Up Is Hard to Do." Rushkoff speaks of *digiphrenia*, or the tension and stress caused when individuals become overwhelmed by attempting to juggle multiple tasks at the same time, an affordance made all the more acute by ICTs. The concept of *fractal identities* is not mentioned in the book, but it is a concept I conceived from cues in this chapter: multitasking in virtual environments, divided attention spans, being (digitally) in multiple places at once, possessing more than one identity in more than one place, and the collision of infinite "digital real estate" with finite "human attention span" (p. 124).

Rushkoff raises issues of self and identity in online environments only tangentially in his book. Rather the idea of having numerous selves or identities, potentially infinite or countless ones, thanks to the power of ICTs finds its seed in this chapter. Ultimately, the concept unfolds at times in spurts and stutters, at other times organically and fluidly, in the [Fractal Identities blog](http://makman13.wix.com/fractalidentities) (<http://makman13.wix.com/fractalidentities>).

Turkle, S. (2007). *Evocative objects: Things we think with*. Cambridge, Mass: MIT Press.

Turkle, S. (1995). *Life on the screen: Identity in the age of the Internet*. New York: Simon & Schuster. *Evocative Objects* is a collection of anecdotes and essays that expound on a concept Turkle introduced earlier in her career in *Life on the Screen*, i.e., there are objects lying beyond the ordinary, important enough that they evoke emotional, intellectual and creative responses in individuals. At first, Turkle speaks of evocative objects primarily but not exclusively as physical objects that make abstract thinking concrete. What makes them profound is how they effortlessly *connect* emotion with intellect, play life roles that are *multiple* and *fluid*, are experienced as essential parts of one's identity (self) typically early in life, and yet have the ability to evoke the *uncanny* as well ("They mark a complex boundary that repels yet attracts," p. 8, *Evocative Objects*). They appear as simple, and yet hide inside them seemingly endless complexity.

Evocative objects do not just stimulate the intellect and the emotions, they are fundamental in identity building, too. While much scholarship harks back to Goffman and his theory of identity as performance-based self-disclosure, Turkle's evocative objects provide another avenue from which identity may come. If there is an identity present to expose or disclose to others, it

cannot come from a vacuum. There must be other forces at work than performance alone in identity building, and it is my opinion that this is where evocative objects play a pivotal role. Perhaps one could consider identity itself as a non-concrete evocative object. Identity allows one to connect with others, is fluid but can be multiple, and brings together thought and feeling -- all the same hallmarks of Turkle's evocative objects. Whether one's identity may be considered an evocative object in itself remains debatable. Regardless, there is no disputing as Turkle claims that evocative objects "shape the self" (p. 10).

Turkle's other book in this list, *Life on the Screen*, functions as a major crux in the development of the concept of *fractal identities*. The author expands on her definition of evocative object to include non-concrete or non-material objects such as dreams, theoretical concepts, and video games. However, her focus is on online virtual environments (VEs) and their effect on the self. It is true that VEs can act as playgrounds - more importantly, safe and non-threatening environments - in which individuals can experiment with multiple and even radically different personalities, e.g. experiment with different genders and personality characteristics opposite of their offline counterparts. However, VEs as "identity playgrounds" is not their only function, as many of Turkle's critics wrongly criticize. One is welcome to explore and experiment with a multitude of personalities, each of which may resemble or differ from the individual's "true" offline personality as much as s/he chooses. Certain VEs such as MMORPGs (Massively Multiuser Online Role Playing Games) or Second Life (multi-user environments) invite and encourage alternate identity experimentation. At the same time, there are VEs that permit adherence closer to one's "true" online identity such as Facebook and similar SNSs (social networking sites) where radical identity experimentation is discouraged if not prohibited. Turkle does not exclude these VEs from her examination of self online. Every level of authenticity of identity, not just the inauthentic or radically different, is entertained by Turkle. She ends the book by inveighing against a simplistic definition of self, that is, one that adopts a short-sighted Enlightenment-era conception that regards self as a stable, unchanging, unitary entity. Rather, she invites the reader to adopt a quasi-postmodernist view informed by Donna Haraway and her "Cyborg Manifesto" that regards the self as fragmented and fluid, capable of disassembling and reassembling itself multiple times over and in multiple incarnations without disintegrating into nihilistic chaos, that is, capable of retaining a level of coherence. She closes by warning that while VEs afford people radical, new identities that often result in new social bonds and bridges, individuals must at the same time caution against becoming seduced by these VEs. In other words, individuals must not forfeit their offline lives for their virtual ones, however entertaining, fantastical, or fulfilling they may be. If one's experiences as virtual identities cannot be left behind and applied to offline life, their value to the individual quickly comes into question, if not turn worthless. In other words, the life on screen should inform the life off screen, enriching and enhancing oneself and not stay there, imprisoning us.

The concept of *fractal identities* draws many parallel characteristics to those elucidated by Turkle on online identities that leave this researcher astonished and yet not entirely surprised.

Turkle's book was not discovered until very late in this project's life. Considering all the ways it grapples with defining the self - capable of being *protean*, *fluid*, *multiple/multiplicitous*, *fragmented*, *emergent*, *flexible*, *ironic*, and *paradoxical/self-contradictory* - this researcher could have saved numerous hours of time searching, reading, and interpreting the literature on self and identity in online environments had he only *started* with this text. Nevertheless, while ICTs and SNSs have changed dramatically since the authoring of *Life on the Screen* -- Web 2.0 technologies such as blogs, Twitter, and Facebook; smartphones and their ubiquitous presence; the advent of high definition Web video such as YouTube, to name a few examples -- it is worth noting how the questions concerning identity with respect to technology have changed very little in twenty years. *Fractal identities* provides a new twist, if not a new name, on what happens to self as it bounces amongst different environments, virtual and offline, and it brings to light updates in the thinking that has occurred since *Life on the Screen's* publication.

Supplementary and Recommended Reading

Doran, S.E. (2014). Identity. In M. Ryan, L. Emerson, & B.J. Robertson (Eds.), *The Johns Hopkins guide to digital media* (pp. 266-68). Baltimore, Maryland: Johns Hopkins University Press.

Gackenbach, J. & Stackelberg, H. (2007). Self online: Personality and demographic implications. In J. Gackenbach (Ed.), *Psychology and the Internet: Intrapersonal, interpersonal and transpersonal implications* (2nd ed.) (pp. 55-75). Amsterdam: Elsevier.

Kroker, A. (2004). *The will to technology and the culture of nihilism: Heidegger, Nietzsche and Marx*. Toronto: University of Toronto Press.

A dense, dystopian approach to the relationship between technology and humanity. This work comes as an afterthought on *fractal identities*, i.e., an alternate Heideggerian perspective on technology and (human) being. It could provide a new direction in which to take the project, albeit a major departure from the theme of identities in digital virtual spaces.

Laboriussen, B. (2014). Avatars. In M. Ryan, L. Emerson, & B.J. Robertson (Eds.), *The Johns Hopkins guide to digital media* (pp. 37-40). Baltimore, Maryland: Johns Hopkins University Press.

Mark, G., Wang, Y., & Niiya, M. (2014). Stress and multitasking in everyday college life: An empirical study of online activity. Paper presented at the *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, Toronto, Ontario, Canada. 41-50.

doi:[10.1145/2556288.2557361](https://doi.org/10.1145/2556288.2557361)

This conference paper confirms Jin's findings (see the two papers above) and what Rushkoff has argued all along in *Present Shock*, that is, the analog-world individual is not meant to multitask in digital space, rather, multitask *well* in digital space. It does not remark directly on its impact on identity, but the paper does serve as recent commentary on the all-pervasive phenomenon of online multitasking.