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Building Serendipity into Recommender Algorithms on Online Platforms: Reviving the Chaos and Randomness of the Early Internet Aesthetic

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Abstract

Nostalgic comments about the early internet often praise its random, chaotic aesthetic. By contrast, the major platforms of today are typically viewed as corporate in aesthetic, with a one-size-fits-all profile and personalised recommendations of products. The curated life is the opposite of the serendipitous life. Instead of seeing strange or unusual items, online algorithms have been shown to trap users into 'you loops', surrounded by similar users in filter bubbles. Algorithms on major platforms give the illusion that users are getting what they want, yet users often complain of a form of aesthetic sameness, blandness and repetition regarding the products they see and are recommended.

In this article, we consider forms of resistance against algorithmic ranking and efficiency, including nostalgia for the early internet. This includes a consideration of early websites, which were more chaotic compared with the algorithmic ranking-based sites of today. We argue that the movement towards a curated life has resulted in a loss of serendipity for the user and a narrowing of the user experience, limiting personal growth and the variety of content to which users are exposed. This 'narrowing' effect contributes to a flattening of culture, where culture starts to reflect what the algorithm rewards. We consider ways to shift back to a more random aesthetic, where less-popular items are sometimes shown to the user to increase the serendipity they experience on major platforms.

***Keywords**:* Artificial intelligence; recommender systems; serendipity; early internet.

1. Introduction

In 2011, the University of Sydney began removing books from Fisher Library to make room for new laptop study spaces.[1] The librarian, John Shipp, had the difficult task of deciding which books would stay on campus and which would be shipped off to a remote, off-site storage facility.[2] To determine which books would go, he invented the notorious 'dust test'.[3] Any books found to have a layer of dust on them would be removed from the campus library, while commonly used books would remain on the shelves. Dusty books would still be available via retrieval from an online catalogue.[4] However, students would have to request that the books be physically brought back to them on campus.[5] This meant it was no longer possible to accidentally stumble upon these obscure volumes on the shelves. You needed to know what you were looking for.

[1] Narushima, "Judge."
[2] Narushima, "Judge."
[3] Narushima, "Judge."
[4] Pearce, "Curious."
[5] Pearce, "Curious."

By the end of the 'dust test' process, over 500,000 books – nearly half of the library's collection – were transferred off-site. The library was transformed overnight from a place of discovery and exploration to a largely digital space, with smooth, seamless study spaces, gleaming white desks and nap pods (Figure 1). Gone were the obscure history tomes, replaced by textbooks and popular novels. Previously, visiting the library involved losing yourself in the shelves, stumbling upon a few random texts – perhaps unrelated to the field you were studying – and learning something new. What the 'dust test' killed was the serendipity of finding the unexpected, to be replaced by the dull predictability of the common, the popular and the mundane. One of the most significant yet often overlooked aspects of the 'new wave' of artificial intelligence (AI) and its integration into all aspects of modern life is its rich potential for cross-disciplinary dialogue. These conversations, particularly between lawyers and computer scientists, are crucial because they may hold keys to increased efficiency and accuracy in legal administration and access to justice. However, lawyers and computer scientists do not always speak the same language. In their 2017 article 'Playing with Data', Lehr and Ohm present a compelling argument for lawyers to shift their perception of machine learning from a monolithic and abstract concept to a nuanced process that encompasses problem definition, data collection and model deployment, with several stages in between.[6] At the same time, in their enthusiasm for increasingly clever machines, computer scientists must not lose sight of the fact that the law and legal reasoning do not easily – and sometimes should not – adapt to computational data and modelling. Herein lies the crux of this article. The potential for predictive analytics in the field of refugee status determination raises pertinent questions about model appropriateness and how data can be collected and used in a way that may subvert legal standards to the detriment of the very real human at its heart.

Figure 1. A malfunctioning 'sleep pod' in Sydney's revamped Fisher Library.
Source: Author's photo, 2019.

The 'dust test' is a fitting ethnographic story for the digital age in which we live today, where digitalisation attempts to make all processes smooth, efficient and seamless at the expense of interruption, accident and surprise.[7] Online platforms have the same problem as the overcrowded library: they contain millions of items that must be sorted and ranked for users to see, with some items needing to be hidden from view. The internet's librarian is the recommender system. These powerful algorithms make decisions on which items should be shown to users[8] and which are too 'dusty' to show on screen. 'Dusty' items are hidden behind search bars or obscure menu options, where users need to manually search for them.

Over time, these algorithms have begun to 'curate' the user experience in order to increase platform efficiency. The push towards efficiency can be contrasted with the chaotic nature of life prior to digitalisation. Anne Helen Petersen tells a relevant

[6] Lehr, "Playing with the Data," 653.
[7] Han, Non-Things; Han, Infocracy.
[8] Ricci, "Introduction," vii.

story of looking for a friend on a college campus in the early 2000s.[9] It was a time before mobile phones, social media or digital cameras. If she wanted to find a friend on campus, she simply had to 'walk around'.[10] Typically, what followed was an odyssey: walking through the halls of the campus, checking dorm rooms, visiting the library to ask whether anyone had seen the friend in question. Sometimes they were found quickly; at other times the search turned into a 'college night picaresque with distractions (shitty nachos) and diversions (good gossip, a random dance party)'.[11] Petersen never knew whether the night would work out: 'There was so much less control, so much less ability to curate what your night would look like.'[12] Walking through the halls and bumping into strangers, there was a chance for new friendships or new romantic relationships. All of this felt more *alive*, fulfilling and joyful than the 'sterile world of infinite choice' facing her online today.[13]

The curated life is the opposite of the serendipitous life. By serendipity, I refer to 'the finding of unexpected information (relevant to the goal or not)'.[14] Curation, by contrast, refers to a pre-planned show or display, or an ordering or structuring of items to view.[15] Recommender systems move our lives away from serendipity and towards curation by structuring, ranking and organising the content to which we are exposed.[16] This occurs via personalisation, which removes the unexpected surprise of unusual items that do not fit our expected taste.[17] Algorithms have the same biases as the 'dust test' of Fisher Library, with a tendency to prioritise popular items,[18] incumbency[19] and homogeneity[20] over variation and difference. In this way, they lead to the same drawbacks of diminishing serendipitous encounters. Netflix, for example, recommends new TV shows based on a user's past viewing history, including what TV shows they clicked on, how long they watched for and what similar users have watched in the past.[21]

Recommender algorithms create a feedback loop for new titles that reinforces a feeling of sameness and repetition: a user will see 'because you watched *Mission Impossible* … here are other movies featuring Tom Cruise', and therefore will be encouraged to watch a similar movie again. This new movie gets fed back into the system, reinforcing the feedback loop.[22] Meanwhile, genres with which the user does not engage frequently are hidden from view.[23] The recommendations resemble a mirror or a 'you loop': reflecting back opinions, entertainment and content that we already like and agree with.[24] In this way, the curated life leads us towards a lack of personal growth, change or transformation. Instead of seeing different content and learning something new, we see content that confirms our existing beliefs.[25] We get trapped into a 'filter bubble' or a 'neighbourhood', surrounded by other, similar users.[26] Personalisation filters out the different, so we are less exposed to views and opinions that are different from our own.[27]

The decline of serendipity online has correlated with the decline of shared spaces of people radically different from one another in the same viewing space. Traditionally, viewers would watch the same TV show at the same time on television, whereas today they stream personally recommended TV shows on Netflix at their own leisure. This decline of the 'shared viewing experience' extends to the graphical user interface: Netflix transforms TV and film posters to suit the viewing profile of the specific user.[28] A user who watches romantic films will see new movie posters featuring romance, while a user who watches action films will see the same movies with more action-heavy posters.[29] Curation of the user experience limits the opportunity of the user to extend beyond their usual watching patterns. Instead, they are psychologically primed to reinforce their pre-existing behaviours.

[9] Petersen, "Sterile."
[10] Petersen, "Sterile."
[11] Petersen, "Sterile."
[12] Petersen, "Sterile."
[13] Petersen, "Sterile."
[14] André, "Discovery," 305–306.
[15] Jansson, 115–124.
[16] Nikolakopoulos, "Trust," 41; Wang, "User," 627–635.
[17] Nikolakopoulos, "Trust," 41; Wang, "User," 627–635.
[18] Fletcher, "Recommender," 9.
[19] Fletcher, "Recommender," 9.
[20] Fletcher, "Recommender," 10.
[21] Gomez-Uribe, "Netflix."
[22] Fletcher, "Recommender," 11.
[23] Pajkovic, "Algorithms." 214, 220–222.
[24] Han, Infocracy, 29.
[25] Han, Infocracy, 29.
[26] Nikolakopoulos, "Trust," 50.
[27] Han, Infocracy, 29.
[28] Han, Infocracy, 29.
[29] Han, Infocracy, 29.

In the next section, I consider forms of resistance against algorithmic ranking and efficiency, including nostalgia for the early internet. This includes a consideration of early websites that were more chaotic in nature compared with the algorithmic rankings of today. I argue that the movement towards curation has resulted in a loss of serendipity for the user and the narrowing of the user experience, limiting their growth and the variety of content they are exposed to. I then consider ways to move back to a more random content format, while retaining some of the advantages of digitisation and (some of) the efficiency gains provided by recommender systems.

2. Disturbing the Dust: Resistance to Efficient Design

'We're going to go and disturb the dust,' Jo Ball said. 'I don't think books should have an expiry date.'[30] Following the announcement of the 'dust test' at Fisher Library, history graduate Jo Ball organised a student protest movement to 'disturb' the dusty books.[31] Ball began by setting up a Facebook page, organising an event titled 'Save the books! Disturb the dust! Mass book borrowing action this Wednesday'.[32] University students were encouraged to borrow the maximum number of books allowable on their library cards, with the intent of disrupting the university's book transfer process.[33] John Shipp, the librarian, had mentioned that any books not borrowed in the last five years would be removed from the library.[34] The students organised to borrow all these books from the library at once. If enough books were borrowed, their thinking went, the library would be saved.

Ms Ball's protest was doomed to failure, as the university had already started the book-removal process. Nevertheless, the fact that a student rebellion occurred *at all* provides a fascinating ethnographic moment of resistance to digitalisation, change and efficiency. Consider the fact that *students were fighting to keep books on campus that they rarely, if ever, read.* The university was instigating digitalisation to make the library more efficient, introducing new laptop study spaces and a new café, making room for popular textbooks and updating the online catalogue.[35] Ball's protest represented a resistance to this process of ordering and structure, and a preference for the chaos of the library of old. One of the central complaints of these students was that removing the books would be bad for researchers. 'If you only read the books that everyone else is reading, you can only think what everyone else is thinking,' writes Japanese author Haruki Murakami.[36]

Fisher Library had always been a densely populated space, riddled with books in tightly crammed shelves, triggering disability and Occupational, Health and Safety (OH&S) concerns. The narrow 'stacks', as students called them, barely had room for two people to move between them abreast (Figure 2). There were rumours of students making out between the stacks at midnight, away from the prowling eyes of campus security. Even then, there was a charm to the chaos and the teeming volumes on the shelves. It was the lack of organisation that students sought. The burgeoning shelves promised that you might find something that you were *not* looking for. There was a lack of organisation: unread volumes appeared side-by-side with staple textbooks, merely sorted in alphabetical or thematic order. A *random* element still existed, in that the thematic texts contained rare or unusual books that defied neat categorisation.

[30] Narushima, "Students."
[31] Narushima, "Students."
[32] Narushima, "Students."
[33] Narushima, "Students."
[34] Narushima, "Judge."
[35] Narushima, "Judge."
[36] Murakami, Norwegian Wood, 42.

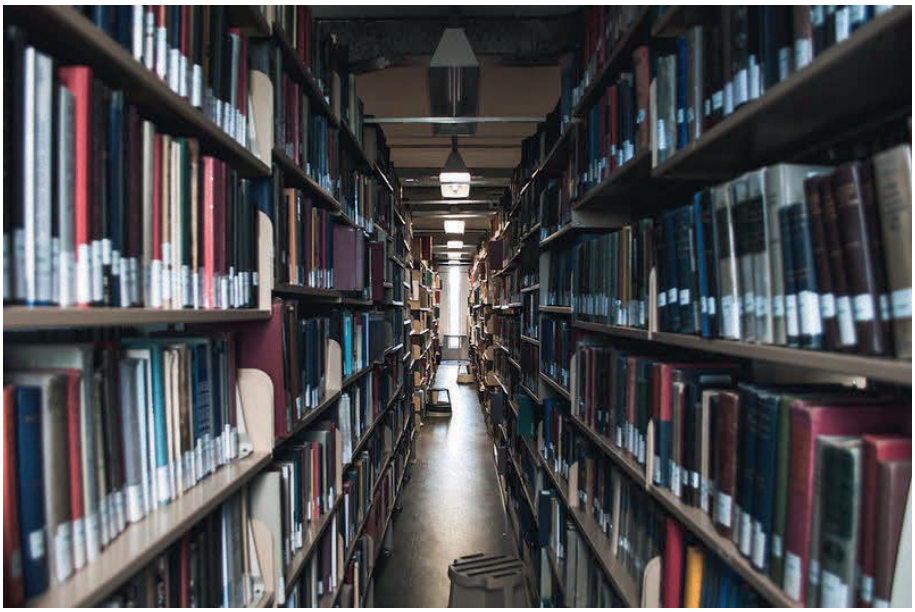

Figure 2. The Fisher Library 'Stacks' prior to dust testing.
Source: 'Jen Y', 2013.[37]

Fisher Library's transformation mirrors the ongoing transformation of the online world. The internet too has dealt with a burgeoning volume of items, and undergone a similar change: from chronological feeds showing everything to algorithmic recommenders preferencing some content and hiding others.[38] The early internet is celebrated in popular media as a time of radical serendipity, where users experienced the chaotic randomness of life, but in an online format. Commentators describe the early internet of the 1990s and 2000s in nostalgic terms as 'a giant treasure hunt'[39] that was 'full of excitement to discover new things',[40] 'rough [and] frontier-like',[41] more 'joyful'[42] and with a fun aesthetic quality.[43] Some of this might be overstated; however, it is true is that the early internet encouraged users to individually express themselves in stranger ways than the modern form: creating their own websites, forums and later blogs.[44] Before the rise of social media, a homespun aesthetic dominated the primitive online landscape with websites such as Geocities and MySpace allowing users to create their own profiles, with their own images, music and animation.[45] These sites provided standardised profiles that could be customised to a much more substantial degree than their successors.

Nostalgia for the early internet revolves around this serendipity and a backlash against the newly algorithmic (and therefore more predictable) feeds. An analysis of nostalgic tweets about MySpace, for example, finds that users celebrated its 'chaotic aesthetic' and the 'dominance of people of colour and young women'.[46] One user wrote that 'sweet, smiling Tom … never rearranged a timeline', celebrating the lack of algorithmic curation on this platform.[47] At times, these sites came across as childish, strange, oblique or niche, but also precisely *because* of this, they would rarely have slotted into the neat, tidy, corporate aesthetic of a Facebook, Twitter or LinkedIn profile.[48] These were the sites that existed when the internet was 'individualized and amateurish', but not yet *personalised*.[49] According to Miltner, MySpace turned users into 'Front-End Web Developers',

[37] Photo from "Jen. Y." on Flicker, licensed under CC-BY Attribution. 18th February 2013. https://www.flickr.com/photos/this-is-snowman/8485507396
[38] Conte, "Death of the Follower."
[39] Diniz, "The Charm of Internet Nostalgia."
[40] Wirawan, "The Nostalgic Feelings."
[41] Szablewicz. "Internet Cafés," 30–33.
[42] Cao, "A Nostalgic Look Back."
[43] Magagnoli, Paolo. "The Internet as Ruin."
[44] Dash. "The Web We Lost."
[45] Mackinnon. "The Death of GeoCities," 237–241.
[46] Miltner, "'Tom Had Us All Doing Front-End Web Development.'" 48, 50–55, 67.
[47] Akira the don, "Sweet, Smiling Tom."
[48] McRae, "'Under Construction' Lives," 8.
[49] Madden. "We Found Love in a Fictional Place."

by changing their backgrounds, loading music, sound effects, buttons, widgets and in-profile videos to completely individualise their landing pages.[50] By contrast, Facebook adopted a standardised profile with a more mature look, in part because it initially required a college email address.

Geocities.com allowed users to build their own websites with bright colours, star banners, music and other features that allowed a higher degree of self-expression.[51] *Pookie's Palace*, a site from 1999, welcomed visitors 'with a swirling purple background, a rainbow teddy bear and neon text' (Figure 3).[52] Following the demise of Geocities as a platform, archives and artistic reproductions have been created in its image. Cameron Askin, a New Zealand artist, created one such aesthetic display with *Cameron's World*, a 'web-collage of text and images excavated from the buried neighbourhoods of archived GeoCities pages (1994–2009)'.[53] He writes, 'In an age where we interact primarily with branded and marketed web content, *Cameron's World* is a tribute to the lost days of unrefined self-expression.'[54] The archive celebrates the 'weird' of the early internet, lionised as a time before people used their real names in association with their social media.[55]

The oblique nature of these early websites contributed to a feeling of randomness. Without the constraints of platform dominance, users were radically empowered to control their own environment. Craigslist, which started in the late 1990s, was the epitome of this early internet aesthetic.[56] The site resisted calls from venture capitalists, paid advertising and changes to its graphical user interface to modernise.[57] First begun as a mail-in service posted online as a newsletter,[58] it morphed into a website where individuals would post random items for sale, jobs and classifieds.[59] The items were disorganised. The site retains its goal of being an uncurated place of discovery, where users picked the categories they wanted and saw a full catalogue of items, rather than filtering items through a curated feed.

Where newer forums like Reddit curate the user experience with upvoting, downvoting and algorithmic suggestions of new subreddits to follow, early websites showed the latest posts in purely chronological order.[60] This meant everyone's comments appeared as soon as they were posted. There was no filtering or moderator preview. There was less focus on the most popular or engaging items and more focus on strange postings. The chaotic nature of the early internet mirrored the chaotic nature of life. Compared with LinkedIn, for example, with its corporate chic aesthetic and 'correct' way to post (praise your boss and company, appeal to status, thank mentors), early internet forums rebelled in their eccentric style, their abandonment of authority and moderation. Jokes, memes and off-topic posts were more common, although some amount of content moderation did occur.[61] As one user reflects, 'early 2000s forums were the best … like before Reddit and other social media and smartphones took off'.[62] The allure of these early forums was the randomness of their structure and the democratic nature of their discussion.

The evolution of the internet away from chaos and towards a corporate order seems to mirror the evolution of culture that William Deresiewicz describes at American colleges: 'now students all seem to be converging on the same self, the successful upper-middle-class professional, impersonating the adult they've already decided they want to become'.[63] Websites also followed this shift in aesthetics. From the chaos of GeoCities came the relevant order of MySpace and the substantial order of Facebook, Twitter and LinkedIn profiles, where everyone has the same profile, with only different photographs to populate it. The shift towards popularity meant these sites now appealed aesthetically to as many people as possible. This is visually clear when comparing a GeoCities site (Figure 3) with the most dominant platform among young people today, TikTok (Figure 4).

[50] Miltner, "'Tom Had Us All Doing Front-End Web Development.'" 48, 50–55, 67.
[51] McRae, "'Under Construction' Lives," 8.
[52] Mackinnon. "The Death of GeoCities," 237–241.
[53] Mackinnon. "The Death of GeoCities," 237–241.
[54] Mackinnon. "The Death of GeoCities," 237–241.
[55] Mackinnon. "The Death of GeoCities," 237–241.
[56] Lingel, An Internet for the People, 71, 85, 118.
[57] Lingel, An Internet for the People, 71, 85, 118.
[58] Lingel, An Internet for the People, 71, 85, 118.
[59] Lingel, An Internet for the People, 71, 85, 118.
[60] Conte, "Death of the Follower."
[61] ResetEra. "Forum Culture from the Early 2000s"; Center for Advanced Research in Global Communication, "CARGC."
[62] ResetEra. "Forum Culture from the Early 2000's"; Center for Advanced Research in Global Communication, "CARGC."
[63] Deresiewicz, Excellent Sheep, 21.

Figure 3. Homepage of Pookie's Palace website, 1999.
Source: Author screenshot, Wayback Machine, 10 October 1999.

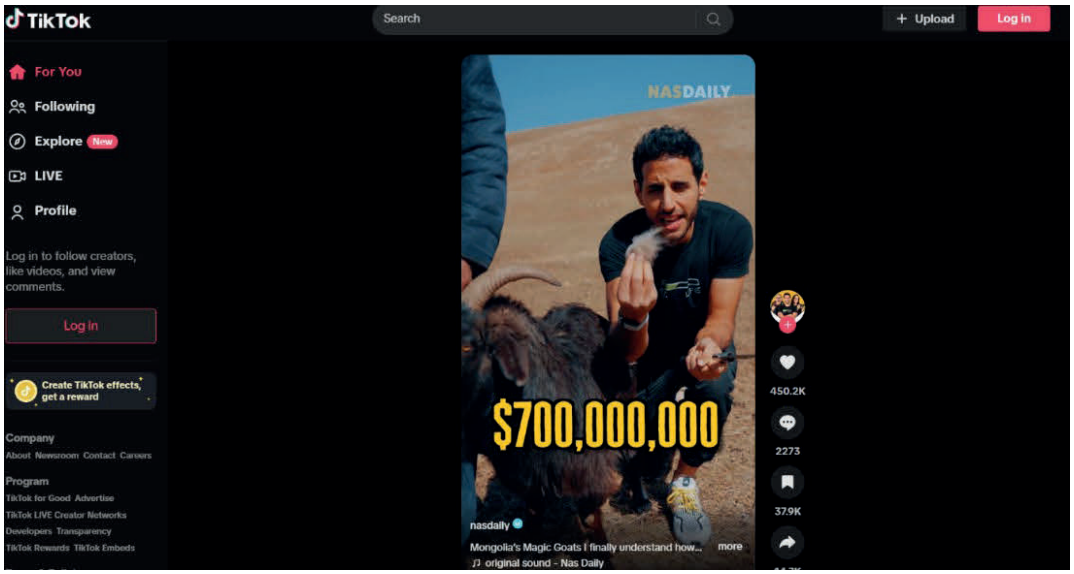

Figure 4. Homepage of TikTok, 2024.
Source: Author screenshot, 16 June 2024.

In the mid-2010s, Facebook, Instagram and other social media sites started shifting their algorithms away from a chronological feed and towards algorithmic engagement via recommendations.[64] Now users no longer saw posts as they were posted, but instead saw the 'most engaging' content.[65] Jack Conte, CEO of Patreon, marks this as the turning point of internet culture, where the major platforms turned their backs on content creators, preferencing engagement statistics to keep people hooked to their platforms for the benefit of advertising revenue.[66] Previously, users saw content to which they subscribed, using the ubiquitous 'Subscription' button on YouTube and other sites.[67] Now, even content users subscribe to is hidden if it was not

[64] Conte, "Death of the Follower."
[65] Conte, "Death of the Follower."
[66] Conte, "Death of the Follower."
[67] Conte, "Death of the Follower."

popular or engaging enough, effectively negating the user's own choice.[68] The CEO of Meta, Mark Zuckerberg, reveals that Facebook and Instagram have changed to follow this trend.[69] Now, around '30% of the posts on the Facebook feed' and 'more than 50% of the content people see on Instagram is … AI recommended'.[70] This is a substantial shift from the earlier chronological feeds of these platforms, which lacked AI recommenders. Instead of showing users what they choose to see via subscription, platforms now recommend content that they think will be engaging to the user, sacrificing autonomy for efficiency.

Previously, chronological feeds retained a character of randomness and chaos; users were exposed to everything posted recently rather than only the most popular posts. Now users are faced with the most engaging posts, limiting their exposure to a diverse set of content.[71] This has two significant effects. First, it cuts users off from *different* users and traps them into a filter bubble filled only with those who are similar to them (in interests, likes and engagement data).[72] Second, it traps them into what Byung-Chul Han terms the 'you loop'.[73] The longer a user spends on a platform, the more the recommender system learns what they like and the more it recommends the same content.[74] Eventually, all other content is filtered out.[75] The user is left with a kind of mirror-reflection of themselves: a platform that shows them things that they already like, that they already agree with and that they have already engaged with before. By nature, this is a stifling of intellectual progression and growth: the progression moves towards further sameness rather than further difference.

This is significant precisely because recommender systems are so ubiquitous today. Algorithmic recommenders now suggest, in part, what news we read, what movies we watch and what romantic partners we match with on dating apps. They make these decisions based on user data, negating explicit human input. On Spotify, songs are chosen for the listener automatically (although this sometimes exposes them to new music).[76] On TikTok, videos are chosen for the user without any need for the user to subscribe to any channel they want to follow.[77] The 'subscription' model is completely replaced in this instance by the algorithm, so the user asserts no agency over the platform.[78] Instead, the platform asserts agency over the user, telling them that these are the products they are interested in.

Unlike previous 'knowledge-based' recommender systems, newer algorithms do not ask the user what they want – they show users what they are presumed to want based on their implicit data and behaviour on the platform.[79] TikTok is a radical break from the subscription model, where users at least got to choose who they followed. The entire TikTok interface is built around its 'For You' algorithm.[80] The algorithm optimises for user retention and time spent on the app, according to a leaked memo.[81] In this way, engagement becomes the number one factor for how the app is designed, rather than considering whether the user can grow or change by using the app to discover new content. This automation of choice and decision-making may attenuate individual agency.[82] When the user loses the ability to choose, they also lose the ability to choose the unexpected: the algorithm predicts their preferences rather than providing them with the full range of opportunities. This results in a loss of serendipity. As a result, curation can narrow the user experience by trapping users into their own reflection.[83]

Chayka suggests that we now live in a 'vast, interlocking and yet diffuse network of algorithms that influence our lives', which has simultaneously created a more 'homogenous' culture that 'perpetuates itself to the point of boredom'.[84] Visual artists must now consider the Instagram algorithm when they make their work, while songwriters tailor their songwriting to the algorithm of TikTok.[85] Charlie Puth breaks down his songwriting into tiny ten-second videos to appeal to his TikTok audience – a process

[68] Conte, "Death of the Follower."
[69] Deng, "Meta Now has an AI Chatbot."
[70] Deng, "Meta Now has an AI Chatbot."
[71] Han, Infocracy, 29.
[72] Han, Infocracy, 29.
[73] Han, Infocracy, 29.
[74] Han, Infocracy, 30.
[75] Han, Infocracy, 30.
[76] Millecamp, "Controlling Spotify Recommendations," 101–103.
[77] Conte, "Death of the Follower."
[78] Conte, "Death of the Follower."
[79] Krook, "Recommender Systems," 2–4.
[80] Smith, "How TikTok Reads Your Mind."
[81] Smith, "How TikTok Reads Your Mind."
[82] Krook, "Recommender Systems," 2–4.
[83] Han, Infocracy, 29.
[84] Chayka, Filterworld.
[85] Chayka, Filterworld.

he does not enjoy.[86] At the same time, an 'Airbnb aesthetic' has started to influence interior design decisions in a lot of popular holiday destinations across Europe.[87] This algorithmic sameness creates the *flattening* of culture – where differences in culture are ironed out for the purposes of efficiency – for quickly renting out that top Airbnb location.

Far from a serendipitous space, algorithms therefore provide us with a space of personalised content verging towards sameness, showing us content that we already expect to receive and therefore (eventually) triggering a form of predictability and boredom.[88] Simultaneously, recommender systems make consumers more 'passive' in their entertainment experience, and less capable of thinking about the culture they are consuming.[89] On Spotify, where songs are chosen for the user automatically, the user does not engage in the 'browsing' process for a new playlist, foregoing choice for the app's decision-making.[90] Users are empowered to curate their own playlists, but even here the app suggests songs for users to add to their list (often of a similar nature or genre). This decreases the serendipity of the prior experience in a record or CD store. There, a consumer would have to browse the shelves and physically pick up the record they wanted to listen to. This gave them the opportunity to walk past something new – a different genre that they rarely if ever listened to.

When an algorithm optimises for engagement, it creates ideas that 'are as acceptable as possible to as many people as possible'.[91] In other words, it flattens culture and trends towards the average. Critics describe TikTok as 'vulgar' and 'kitsch', referring to its highly engaging, popular short-form video content of people binge-eating, mimicking popular dance crazes or binge-drinking alcohol.[92] The company admits that such content has had an impact on culture and user behaviour, including exposing users to new music and influencing what users recommend to their friends.[93] Among Gen Z, 'I saw this on TikTok' has become a popular catchphrase.[94] What gets lost in the wash of this is the homespun DIY nature of an earlier internet age, a sense of plurality of experiences online, unique encounters and strange experiences that differ from those of other users, while not yet being *personalised* and streamlined by an algorithm.

3. Rebuilding Serendipity Online

Designers of recommender systems can take a few key lessons away from nostalgic user reflections of the early internet and the student resistance movement against the 'dust test' at the Fisher Library. First, some users enjoy the randomness and chance that the early internet gave to their lives, the feeling of being on the frontier with new and unexpected discoveries behind every corner. Second, some users consider the algorithmic reordering of their lives bland, repetitive or simply less exciting than the internet of the past, including the joys and unexpectedness of the chronological feed. Third, the aesthetic quality of the early internet and the Fisher library, with its chaotic shelves, is an aesthetic that can inspire a feeling of discovery and exploration. Finally, empowering users to control their own experiences online can improve the chances of experiencing serendipity, as well as modes of self-expression that have since gone out of fashion. If each user can express themselves in more unique ways, this diversifies the content of the internet for every other user.

Recommender systems could be redesigned to place serendipity at the heart of the user experience. This includes periodically including more random items in the feed, which at a minimum would prevent users from being shown the same item many times,[95] and go beyond popular items. Instead, the algorithm could be biased towards increased *novelty*, *serendipity* and an element of randomness – unexpected items or less popular items being shown more often[96] – that is, showing users content from new genres, categories or themes and actually asking them, 'Would you like to see more diverse content on your feed?' Finally, from a cultural diversity perspective, designers could be encouraged by consumers to move away from a purely consumption (and attention) focus of their apps and towards a more educational or intrinsic purpose, such as an art gallery featuring a broader diversity of items to its audience, to increase their understanding of the world around them.[97] While many go to the Louvre to see the *Mona Lisa*, the museum itself features thousands of paintings that are just as striking, if not more so, in the rooms surrounding the popular artwork.

[86] Dever, "How TikTok has Changed the Music Industry."
[87] Loder, "The Aesthetics of Digital Intimacy."
[88] Dever, "How TikTok Has Changed the Music Industry."
[89] Chayka, Filterworld.
[90] Millecamp, "Controlling Spotify Recommendations," 101–104.
[91] Chayka, Filterworld.
[92] Chen, "Analysis of Media's Effect," 120–126.
[93] TikTok, "New Studies Quantify TikTok's Growing Impact."
[94] TikTok, "New Studies Quantify TikTok's Growing Impact."
[95] Foulonneau, "Recommender Systems and Diversity," 72.
[96] Foulonneau, "Recommender Systems and Diversity," 72.
[97] Foulonneau, "Recommender Systems and Diversity," 75.

Some call these diverse items 'the long tail'.[98] Since recommender systems typically prioritise popular items, this can create a 'long tail' effect of lesser-known items in the catalogue.[99] These are 'dusty' items that never get borrowed because people do not know they exist. In this case, the algorithm can be adjusted to place a higher focus on these lesser-known items, and simultaneously improve the profits of the company. Long-tail items provide an opportunity to target niche products to niche consumers, who are otherwise left out by only being able to access popular items. Netflix's recommender system was based on this long-tail design methodology in its original conception.[100] This made use of a huge catalogue of film and TV items that might appeal to the individual user. However, long-tail methodology can still result in trapping users into a few key genres (even while showing them niche products of that genre). The methodology of the long tail must therefore be balanced with the need for individual diversity in recommendations: expanding the lives of the users by showing them more variety and reinstating that feeling of surprise and adventure.

A few years after graduating, I returned to the Fisher Library. In many ways, it was unrecognisable from the days when I studied there. The nap pods that had been installed were malfunctioning (Figure 1), the students were left sprawled across the library amidst a sea of laptops on gleaming white tables, and the stacks that I remembered were gone, replaced by orderly rows of books at a greater (more OH&S compliant) distance. Entire sections of the library that had once held books were replaced, a new café stood in the middle of the room and I listened to the hum and hiss of the coffee percolating. It struck me, looking at the students studying there, that perhaps they didn't understand what they had missed out on: the joy of discovery, getting lost amidst the shelves in the middle of a project, finding something new and obscure. Instead, amid the sea of those studying were a handful on TikTok, or Instagram, getting fed content by the machine that had been so accurately and diligently trained on their personal data.

[98] Foulonneau, "Recommender Systems and Diversity," 75.
[99] Foulonneau, "Recommender Systems and Diversity," 75.
[100] Foulonneau, "Recommender Systems and Diversity," 75.

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