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APPLE MEMORIES AND AUTOMATED MEMORY-MAKING: MARKETING SPEAK, CHIP-ENGINEERING, AND THE POLITICS OF PREDICTION

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Introduction

Released in 2016, Apple Memories introduced so-called “advanced computer vision to automatically create curated collections of your most meaningful photos and videos”. The application performs “11 billion computations per photo” completely on-device, marking a shift from the company’s previous focus on helping users organize their own content. In a moment where “algorithmic agents make us and make the knowledges that compose us” (Cheney-Lippold, 2017), our relation to memory practices is increasingly influenced by AI and its opaque infrastructures.

Before digitization, personal archives were most often composed of laminated pictures, cassette tapes, etc, that were stored in the private sphere (van Dijck, 2007). With digitization, file cabinets gave way to digital objects, "a technological and sociocultural transformation" termed *mediatization of memory* (ibid, p.50). Now, personal archives become increasingly datafied and controlled by algorithms. Algorithmic logic, founded on automatization and prediction, means a further *mediatization of memory*, with impacts on the way we construct our personal memories, history, and identity. To contribute to critical scholarship on this issue, I analyze Apple Memories as a way of automated memory-making.

Apple Memories at two different levels

How is automated memory-making framed by its developers as an experience (advertisement, imaginary)? On the other hand, how is it expressed through the work of the material layer that makes it possible: the secluded chip (circuit, silicon, electricity)? This paper uses a new materialist reading of technology to closely inspect material

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formations in their technical (“stuff you can kick”; Parks, 2015), and sociopolitical aspects. This happens, as described in each section, by both examining Apple's rhetoric on memory making, and describing the architecture of the chip, and how it functions. This approach has proved especially useful as a strategy “to open up a space to examine how objects and object properties frame cultural practice” (Dourish, 2017).

Marketing speak and the affect of algorithmic automation

In the first line of inquiry, I turn to a critical analysis of Apple's discourse on the Memories feature during WWDC (Apple’s conference for developers) in the period 2016-2018, and its TV advertisements. Memories are consistently presented as affective relations that can be surfaced by the AI through connections between the images’ metadata (location, time) and detected content (people, scenes, objects). The results are presented by Apple as: “the most relevant to you”, “people that are special to you”, and “the most special photos”. As put by Apple executive Federighi, “we can figure out that you might want to see photos of a highlight reel of the last weekend (...) and offer those to you at just the right time” [Fig.1]. Furthermore, the 2017 ad “The Archives” [Figs.2-3], represents the algorithm inside of the iPhone as an elder man that lovingly picks and selects memories, that a user cries upon seeing. The use of AI is framed as an affective way to sort through the personal archive, effectively surfacing the most meaningful memories.

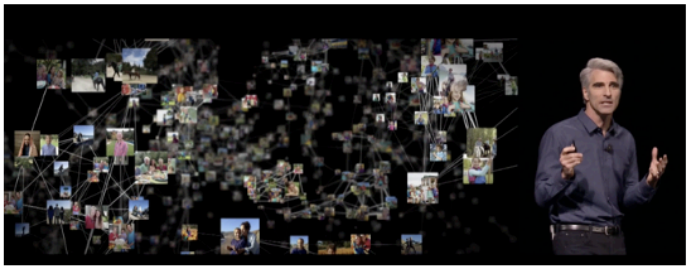
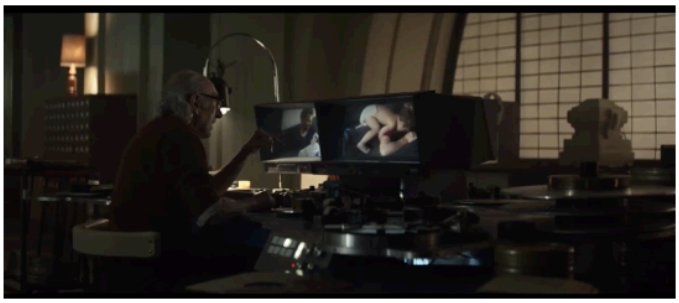


Fig. 1: WWDC Keynote (2016): photos of a trip are represented as clustered together in a tridimensional network, based on relations of metadata and scene-recognition.



Figs. 2 and 3: The ad “The Archives” (2017) presents the elder man (top) carefully curating images inside the phone. The result is shown in the user’s hands: “practically magic”.

Chip-engineering and the embedding of prediction

The material implementation of Apple Memories is analyzed by looking at the A11 Bionic chip, which makes the predictive computation possible. The chip unveil presentation was analyzed alongside teardowns, press material, hardware design textbooks, and two expert interviews with chip engineers.

The chip receives its “Bionic” branding from the idea that it embeds humane qualities, as a Neural Processing Unit has been introduced. The NPU is a hardware accelerator for AI, specializing in the types of computation (matrix multiplications) that are required for machine learning applications such as Apple Memories to become faster, more power-efficient, and less heat-generating.

Machine learning pivots “around ways of transforming, constructing or imposing some kind of shape on the data and using that shape to discover, decide, classify, rank, cluster, recommend, label or predict what is happening or what will happen” (Mackenzie, 2015, p.432). As described by Mackenzie, “implement[ing] machine learning techniques is largely a matter of implementing a series of matrix multiplications,” as they allow to “very efficiently make lots of predictions of lots of hypotheses” (2017, p.69). Predictive modelling thus becomes embedded in the chip design itself. This shift is meaningful because it allows machine learning to efficiently run on-device (as opposed to on data centers), showing how data infrastructures are directly tied to material affordances of devices.

The politics of predictive memory-making

Automated memory-making in Apple Memories, as seen in both marketing and chip-engineering, is based on machine learning and predictive modelling. The logics of prediction, thus, play a major role in this further *mediatization of memory.*

Firstly, Apple Memories is part of an ongoing shift in how information is thought: beyond discrete elements, and towards born-digital data pieces that afford automated classification. Surfacing affective connections that matter to the user frames the archive no longer as a static collection of objects, but as relational elements in a computerized network [Fig.1], with the main assumption that personal digital objects are data: “made of things that fit in stable and distinct categories.” (Mackenzie, 2015, p.433)

Secondly, Apple Memories' predictive logic means a change in the affordances of memory-making: less focus on making archiving easier, and more on collaborating with an affective, humane, and personalized algorithm. The prediction by Apple Memories cannot be seen as impartial/apolitical, but as a proxy or gatekeeper to memory-making. Much like other recommender systems, the user is analyzed and suggested what to remember. In this frame, Seaver’s (2019) analysis of the politics of recommender systems as traps points to how these systems are modelled with the aim of capturing the user, and not of effectively generating what the user may think they want, considerations that become especially problematic in the production of personal memories.

Thirdly, Apple Memories is connected to a broader shift of AI to mobile computing, with consequences to how we think about personal data, privacy and surveillance. We can't lose sight of AI's materiality: the physical places where computation and data storage are matter. The implementation of on-device AI arguably works in a more private way than on inscrutable data centers, but could also mean a further domestication of prediction.

Conclusion

Our memory is not a computer, and memory-making is more than information processing. As applications promise to cut through the clutter of our big data, the politics of these systems need to be carefully analyzed in the imaginary they present and how they physically materialize them. By interrelating marketing speak with chip-engineering, we see that the ongoing shift towards an automatization of memory-making follows a predictive logic. This logic puts the algorithm as a proxy and gatekeeper of what we remember, outsourcing the control over the personal archive to the system's personalized predictive models. Finally, the shift of computation toward mobile computing reframes AI as a pervasive system, while also potentially increasing user privacy.

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