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HYPERIMAGE INDEX: RENDERING RESEARCH ON ALGORITHMIC IMAGE SYSTEMS

Abstract

Image has gone *hyper*, can research catch up? This essay proposes collective indexing as an alternative to academic publishing for rendering research on fast-changing and larger-than-human subjects such as algorithmic images. Following the introduction of notions of network and scale in my research, the essay articulates the value of collective indexing while mapping out contemporary examples. Collective indexing produces new ways of knowledge making and community building, as well as new forms of research aesthetics apt for addressing the distributed nature of algorithmic image systems.

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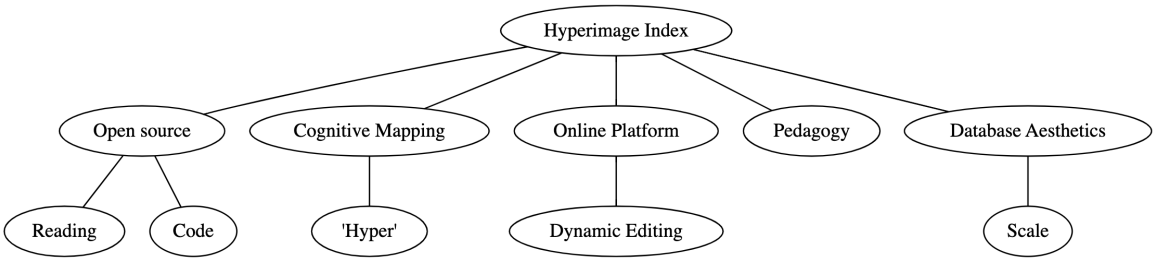


Figure 1: Elements of collective indexing

The proliferation of digital media has brought new operationalities to images. The first wave of new operational techniques stems from the possibility of rendering images as an array of discretized information units — pixels. This category includes the many now-banal digital processing techniques from color filters to data moshing. The newer wave of operations leverages the networks and the computational power to access them. Image are treated as information on a computational level. Disciplines such as computer vision and remote sensing exemplify this new mode of operations, leveraging networks (social, informational, or neural) to connect images with other forms of information. Witnessing digital media's transformational impact on visual culture, photography theorist Fred Ritchin coined the term hyperphotography to denote a new "linked, dynamic, node-like photography." (Ritchin 73) A digital photograph, he suggested, is a map of connections where each pixel serves as a hypertext, a channel to new information. He envisioned a group of pixels on a photograph of an individual hat can link to a series of photographs of other hats, or as he puts it, "a soliloquy on the hat and memory." (Ibid.) However, as many scholars have pointed out, the notion of network has a much more profound implication for images than hypertextual links to other images. Images are embedded in a complex and often invisible network of human and non-human agents, visual and invisual information, and material and immaterial organizational infrastructure (Crawford and Joler; Dvořák and Parikka, Fisher, Hoelzl and Marie; Rubenstein and Sluis). In other words, image has gone hyper.

The complexity emerging from the chimeric fusion of computation and photography calls for a theoretical reframing of image studies. (Rubinstein; Hoelzl) Hoelzl, for example, advocated for radical enlarging its scope. Other scholars, like Joanna Zylinka and Jussi Parikka, decenter the human subject and call attention to the becoming of images in the network. Research on digital visual culture must first address that images have expanded beyond the human scale to the degree that the humanly-accessible portion is an interface to the complex network from which the image emerges and dissolves. Images bleed outside picture frames and digital screens into energy-hungry data centers, global supply chains, and crowdsourced labor platforms (Paglen and Crawford). From an individual point of view, an image is a visual representation of human experience; Viewed from the network level, image and nature are co-evolving in a cybernetic loop where images shape the human condition as much as it is shaped by it (Likavčan and Heinicker) .

Images also exceed the disciplinary apparatus that previously conceptualized them on the human scale. Algorithmic image systems have become inextricably intertwined with almost every aspect of human experience. Thus, the study of image can no longer

be tidily contained in a singular discipline that focuses on either the visual, cultural, or technological. In other words, the notion of image has scaled beyond disciplinarity. Experts from different fields study images from their vantage points, through the lens of technological innovation in computer science and engineering, critical media theory in digital humanities, artistic intervention from art, and political and societal implications in feminist and gender studies, often cross-referencing, or borrow promiscuously from each other. As image goes hyper, and expands beyond the human scale and enters the posthuman turn, I propose collective indexing as a research method to: (1) adequately describe a topic as broad and as complex as algorithmic image systems, (2) render the findings in a form that reflects the networked and scalar nature of algorithmic image systems, (3) exemplify the common research interests and different interpretations of concepts, such as network and scale, across disciplines, and (4) create new meanings through exploring interdisciplinary connections. Perhaps more surprisingly, rendering research through collective indexing opens up new avenues in implementing open-source knowledge, community building, and new aesthetics to capture the ever-expanding and elusive subject: images in algorithmic culture.

Network, scale, and hyperimage

Two concepts are central to images in algorithmic culture: network and scale. Network is perhaps the more obvious out of the two. Whether disseminated via social networks, organized by metadata, or grouped together depending on labels assigned by Amazon Mechanical Turks, digital images are always seen and understood in the context of other images. The networked nature of digital images enables a new mode of operational possibility. An image is not only a surface to be looked at, but a means to analyze, surveil, and train. A selfie unsuspectingly uploaded on Flickr is scrapped into a training dataset for facial recognition. The algorithm developed is sold to a state agency, which is then used by law enforcement to identify political activists, or by a soldier controlling an aerial drone. The ripple effect is convoluted and spreads across time and space beyond the moment of capture and upload. This extravisual utility of images in the algorithmic image is perhaps most succinctly captured in Harun Farocki's notion of operational image and in his film essays *Eye / Machine*, in which he exposes the image-processing techniques used in modern warfare. The networked nature has been pinpointed by media scholars in different terminologies, most notably networked image (Rubinstein and Sluis), platform seeing (Mackenzie and Munster), and hyperphotography (Ritchin), to name a few. Each terminology elaborates on an aspect that the network brings to visual cultures: the networked image articulates the undecidability of the images' meaning brought forward by metadata; platform seeing suggests a new mode of invisual perception centered around the assemblage of images aggregated through neural networks and various platforms; and hyperphotography envisions a node-like photography where each pixel can act as a hyperlink to other images and a channel to new information.

The (over)abundance of images and the omnipresence of cameras provide the necessary condition for another characteristic of algorithmic image systems: scale. The emergence of big data provides the materials needed for statistical predictions and pattern recognition. Facebook most famously exploits users' profile data and online interactions to predict future behaviors and

sell targeted content to unsuspecting individuals — surveillance capitalism (Zuboff). Similar logic is being applied to computer vision, where through analyzing large amounts of images, computer scientists establish a statistical correlation between a particular pixel pattern with a semantic conclusion (Pasquinelli and Joler 23). Visual culture are experiencing a statistical turn, where every individual, be it pixel, image, or user, contributes to the validity of predictive models. The many scales in which we capture and observe the same subject affect how much more information we can extract from an image. The Google computer vision project *NeRF in the Wild* exploits the scale to its advantage (Martin-Brualla et al.). It uses a particular type of neural network to interpolate the 3D structure of famous monuments from all the tourist photos taken from different vantage points at different scales. One can describe the resulting 3D scene as a hyperphotograph connecting all the images of the same monuments taken at different positions in different resolutions at different scales. In my artistic research, *Ground Truth, or How To Resurrect a Tree* (2019-), I explore the discipline of remote sensing and its techniques of observation through data, models, and sensors. In remote sensing, a mathematical correlation between pixel value and tree size established through ground-level observation helps scientists interpret satellite images of trees taken from space, revealing information that is otherwise lost due to resolution limits. Even though individual trees are invisible in a satellite image in which one pixel represents a ten-square-meter area of land, scientists can recover, or 'resurrect,' a tree by applying the same statistical model established by comparing ground-level observation with satellite data. In other words, this new way of trans-scalar seeing allows us to almost limitlessly extrapolate and interpolate information encoded on a digital image, converting between human observations and machine calculations and traversing between human scale and planetary scale. Photography theorist Andrew Fisher has explored the concept of scales in his writings, from the scaling operation of an image (zooming in and out) to its statistical operations. More recently, media theorist Zachary Horton brought the notion into the spotlight by rethinking the relationships between knowledge, mediation, and the environment through scale. He further elevates scale into an ontological domain where certain entities can be differentiated and phenomena emerge. "A scale is the abstract space and time in which a set of typical events take place. Even 10^{-7} meters is as big as the universe, but only certain events take place there." (Horton 191) One can imagine the universe as an image and scale as the imaginary camera from which we create the image. One can scan the entire universe with a scanning electron microscope, in which case the universe is observed on an atomic scale, or one can look at the universe through a telescope, in which planetary movement rather than the collision of electrons becomes apparent and prominent. In both cases, the same universe is being observed, but the scale of observation crucially influences ways of sense-making — what can be differentiated, analyzed, and understood. Algorithmic image systems do not work on a static scale but gain new operationalities by traversing different scales.[1] The algorithmic condition of image requires a research method that facilitates transcalar reading.

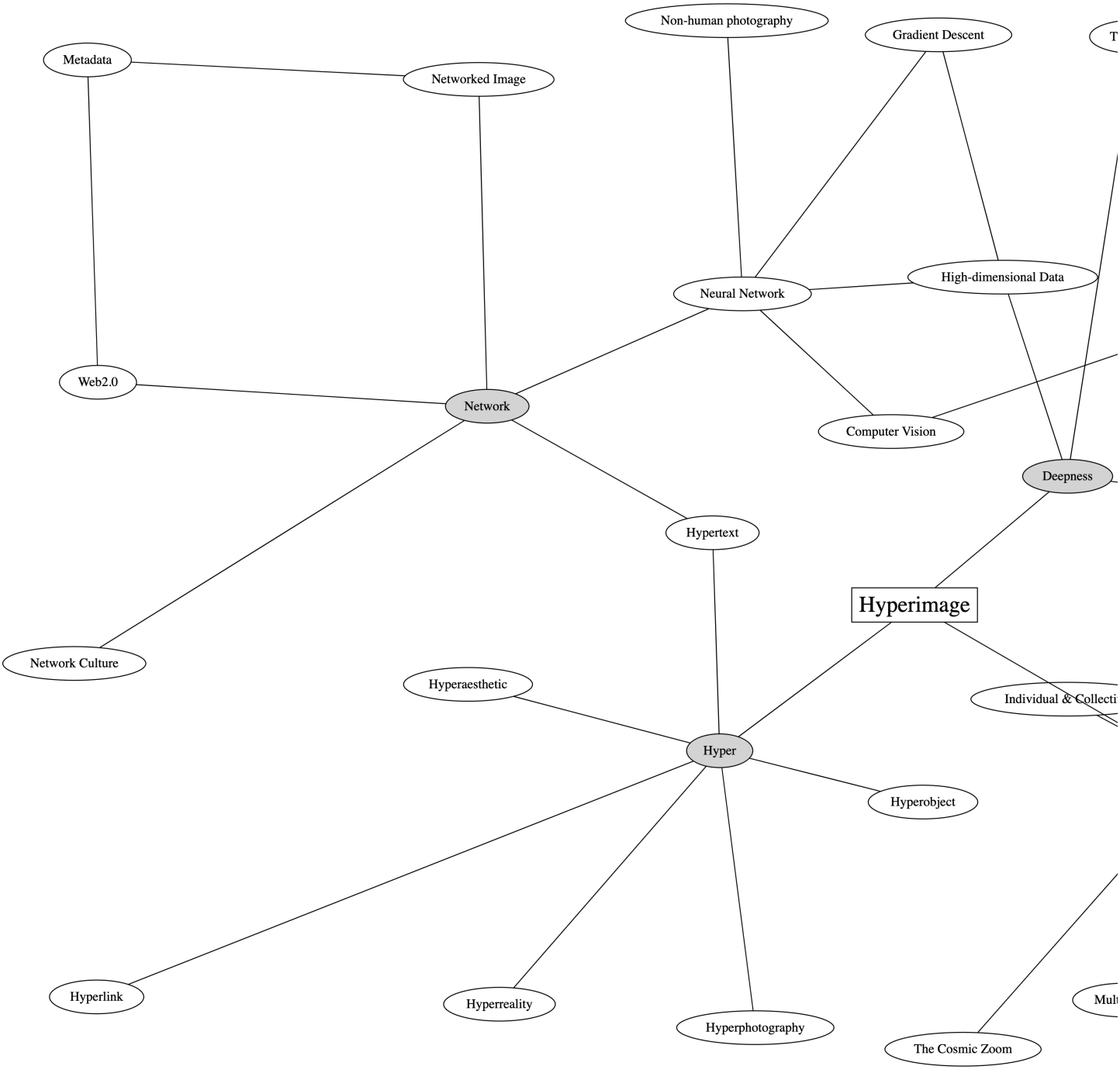
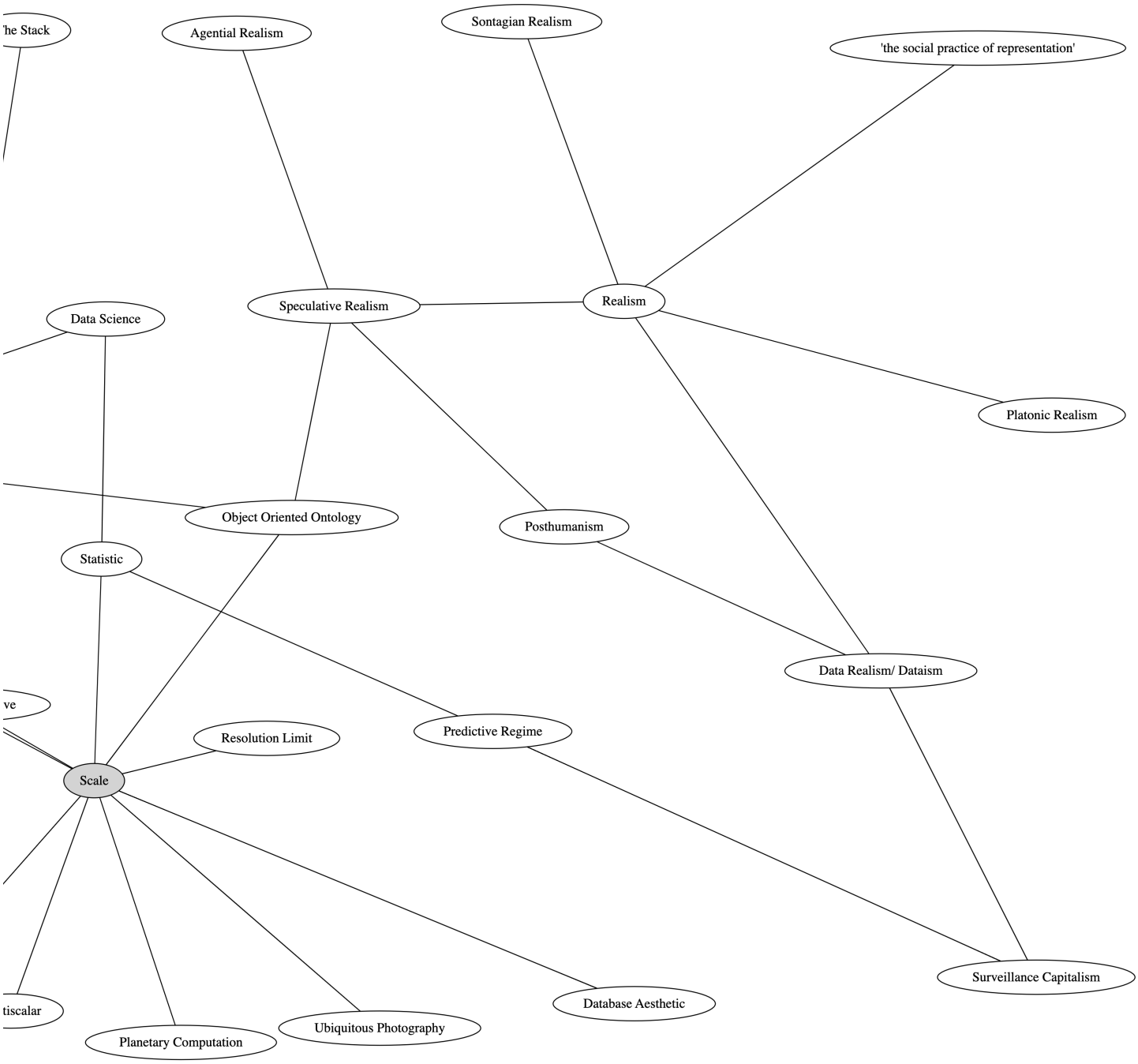


Figure 2: a cognitive map of hyperimage


'he Stack
Agential Realism
Sontagian Realism
'the social practice of representation'
Data Science
Speculative Realism
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tiscalar
Database Aesthetic
Planetary Computation
Ubiquitous Photography

Information network — aggregating, indexing, cognitive mapping

Ritchin's borrowing of the prefix 'hyper' in 'hyperphotography' connotes the early imaginations of the Internet. The node-like photography he envisioned can be said to be a natural development of images after Vannevar Bush's conception of the 'Memex' machine and Ted Nelson's notion of 'hypertext', both foundational to the early imaginary of the Internet. In 1945, engineer Vannevar Bush (35-47) proposed Memex as an electronic rhetorical system for organizing scientific knowledge. He conceived a way for users to make links between various textual and visual materials from different sources and organized them into trials of information. The imaginary machine utilized photography for filing in two ways. Firstly, documents are archived on microfilm, each assigned a unique code for easy retrieval. Secondly, photography is used to record the collections of materials and any additional notes the users made — an analog screenshot. Two decades later, Ted Nelson coined the term hypertext to mean "a body of written or pictorial material interconnected in such a complex way that it could not conveniently be presented or represented on paper." (Nelson, 144). The file structure for the complex valorizes rearrangement and unpredicted assemblages of ideas. Nelson underlines the logic of non-sequential writing — text that branches and allows choices to the reader. With a focused interest in an alternative way to organize text, Nelson posited that hypertext would reify the connections between documents, making it easier for readers to follow the evolution of ideas.

Valorizing the power of the network in organizing knowledge, recent initiatives such as *Cyberfeminist Index*, *A New AI Lexicon*, and *newmaterialism.eu* have adopted index-making to publish research. These projects give shape to 'larger-than-life' topics through aggregating, mapping, and collective indexing. *Cyberfeminist Index* is a project initiated by Mindy Seu to archive and aggregate literature from thinkers across cultures and disciplines that can be loosely grouped under the term 'cyberfeminism'. The project began as an excel sheet and evolved quickly into a valuable online resource. The website launched in 2020 has a bibliography of 717 items from 1985 to 2021. Each entry is annotated with a brief description and accompanied by a link to the book or a website, some even to a downloadable pdf. Next to the main index is a window showing a list of viewed items where users can download notes for all items at once.

In traditional publishing, index refers to an alphabetical list of subjects, usually arranged at the end of the book, with reference to the page they are mentioned for easy retrieval of information; in the online context, indexing often refers to the method of injecting metadata and keywords for search engines to archive and retrieve websites. In both definitions, indexing is fundamentally a practice of cataloguing, archiving, retrieving, organizing, and through that, making new connections. The term 'index-making' here refers to this practice and is not tied to any specific medium. Index is a close relative to glossary, codex, lexicon, mindmap, and anthology in that it cultivates connections and intertextuality. Index-making aggregates concepts and references. The index acts as a database, where the data points can be organized into various narrative structures such as maps to outline the conceptual terrains of a new discipline for faster sense-making.

The aggregation of data points and literature resonates with the networked and scalar nature of hyperimage, and through the

index one begins to outline the technology and its discourse that are much larger than the human and distributed across time and space. Index-making renders the multidisciplinary cross-pollination of ideas visually. In this way, index-making functions similarly to 'cognitive mapping'. Similar to algorithmic image systems, cognitive mapping means different things in different disciplines. In cognitive science, it is a spatial representational map of how a mental system processes information. More generally, it refers to a semantic network of an individual's knowledge system — a mind map. I prefer philosopher Frederic Jameson's definition of cognitive mapping as "a situational representation on the part of the individual subject to that vaster and properly unrepresentable totality, which is the ensemble of society's structures as a whole" (Jameson 51) because it better captures the potential of mapping as a method to transcend scales, to achieve a new understanding by moving between an individual and a totality, the particular and the general. Cognitive mapping is a navigational tool for humans caught up in what he called 'postmodern hyperspace' — a complex constellation of urban cities, globalized capitalism, and digital culture. For Jameson, the hyperspace eclipsed the capabilities of individuals to situate and locate themselves in ways that allowed them to 'cognitively' map the world around them, both vertically and horizontally. His thinking seems to hold even more relevance today, where larger-than-life entities from network to climate increasingly dictate every aspect of life yet escape human cognition that failed to think outside the human scale. Although my interest in cognitive mapping does not entirely overlap with his — Jameson was interested in representing capitalism through cognitive mapping to bring about political change, mine is on algorithmic image systems and its multidisciplinary discourse — we are both drawn to its revelatory power to represent what is otherwise an unrepresentable totality.

Social network – community building

However, collective indexing does not simply entail linking information – as in the way Google indexes websites, it fosters community building and new aesthetics. In creating the online index, Seu built a network of collaborators around the project by inviting them to annotate and contribute texts to the ongoing conversation. The process helps redefine cyberfeminism in an inclusionary and polyphonic manner. *Do Not Research* and *New Models* are two other examples. These self-organized online platforms explored alternative mode of research publishing by leveraging DIY publishing, easily-accessible online platforms, and community organizing tools to share information, build discourse, and create knowledge.

Do Not Research is a collaborative platform for publishing writing and visual art about internet culture that began as a Discord chat community founded by artist Joshua Citarella in 2020. The website gained popularity through word-of-mouth and the contributors' social media. On its homepage, also called Index, are writings by community organizers and contributors. The Index is updated irregularly (from weekly to monthly). Each post covers a range of topics from commodity feminism to Taoist anarchism. The length of each piece resembles an online forum post, perhaps an excerpt from the Discord chatroom or reading group discussions. However, its content is much more well-considered than the usual social media rant. While embracing informality and social media, the platform is distinctly different from a Facebook secret group for too-cool-for-school researchers.

As Citarella explained in his Instagram post, it is organized as a counter-strategy to academic publishing and the financial system in contemporary art to better address pertinent topics that private institutional funding will not facilitate.

Similarly, *New Models*, a culture podcast founded in 2018 that has since expanded into a media platform, has cultivated a closely-knit community of followers on Discord, where they share insights about living in emergent tech and online ecosystems. Engaging with their followers, they can quickly respond to current events and online cultures, switching between the more unilateral communication of their podcasts and the dynamic discussion on their Discord server. Their discord server becomes the furnace of ideas, where each user brainstorms, discusses, and tests their theories. Theorization happens at an unprecedented rate. New connections and vocabularies accumulate with each discord discussion, a real-time testing ground of neologism. This community of cultural prosumers and its online platform allowed *New Models* to finish *NM CODEX Y2K20*, a book full of reflections on the pandemic, spectator activism, and capitalism in 2020. The preface of the book succinctly summarizes their publishing practice: "through signal detecting and map-making, the *New Models* homepage will cut through the disorienting din of online media and reveal the important underlying narratives of our times." (Benkhedda et al. 8)

The aesthetics of mapping

The work of American artist Mark Lombardi and Finnish artist Minna Henriksson exemplifies the epistemological value of mapping Jameson proposed. Lombardi was famous for producing large-scale maps, what he calls "narrative structures," revealing the underground structures of power woven between political, economic, and criminal forces on a global scale. The power structures are depicted as a network of politicians, banking organizations, and government agencies, united by lines representing flows of money and relations. As early as the 1990s, he highlighted the links bringing the Bush and bin Laden families together, as in his work *BCCI-ICIC & FAB, 1972-91 (4th Version)* (1996-2000), which will find a strange resonance after the attacks of September 11, 2001. His network was so meticulously accurate that FBI agents showed up at the Whitney Museum, where Lombardi's drawing was part of their permanent collection, to examine the financial network of the terrorist group Al Qaeda. By mapping the social and political terrain in which he lives, his drawings successfully outline the complex web of influences that is too big to grasp from an individual perspective. His other work, *Bill Clinton, the Lippo Group, and Jackson Stephens of Little Rock, Arkansas (3rd version)* (1998), is currently on view in the exhibition Reseaux Mondes at Centre Pompidou, proving his network drawings remain, if not more, relevant in the time where the human experience is tied to the network infrastructure, whether physical or virtual, biological or artificial.

Minna Henriksson, on the other hand, focuses on the power structure underlying the art world. Her wall-sized map outlines the interpersonal relationship between art institutions and curators in different countries. In *The Helsinki Map* (2009), she organizes gossip, insider conversations and her own perception of the art scene into a complex network of social relations, rendering the often secretive and elite art world transparent. In the same spirit as Jameson, Henriksson uses the map to highlight several problematic issues she detected: accumulation of parallel power positions, and the division of

the institutional scene between rightist and leftist cultural policy. She makes maps to drive institutional reform within the Finnish art community. Both Lombardi and Henriksson use mapping to give shape to an unrepresentable totality.

Drawings created by both artists have an interesting feature: they reproduce extremely poorly in scales other than the original one. Due to limited page space, Lombardi's work was assigned one spread on the official French catalog: one image paired with a paragraph of text description. His massive drawings are resized into an image no longer than 15 cm wide, rendering the text on the drawing illegible. This violent change of scale has reduced his work into a vacuous icon of the original work, as if the drawing is only meant to be looked at in person in its original scale. His work refuses to be enlarged or compressed. Mark Lombardi's network drawings allow viewers to move through different scales freely. One can choose to take the network drawings as a whole or as an assemblage of relations. One can take a step back to look at the entire picture or move closer to focus on one particular relation. Only by shifting between scales can one gain a fuller understanding of the power relations underlying our world.

Organizational aesthetics and distributed curating

Index-making benefits from the development of online platforms and their catalytic power to enact certain events — 'organizational aesthetics' — as Olga Goriunova has suggested (4). Goriunova conceptualized the act of organizing (e.g., curating, archiving, aggregating), specifically on online art platforms, as a continuous aesthetic production that values the process over the end product. Early art platforms such as *Runme.org* and various self-initiated art-surfing clubs, which started as an open database of software art and a social sharing platform of interesting online finds respectively, quickly became key sites of conceptualization of digital culture. The strategy of organizing itself may be simple, but it establishes important connections, both social and theoretical, from which new art movements unfold. Online art platforms provide a fertile ground for social organization, theoretical discourses, and the becoming of emerging research disciplines. Goriunova characterizes these online platforms as a site for the collective becoming of art through collaborations, referentiality, repositioning, and sociality — a distributed curatorial proces. (Goriunova 88). Contrary to a monograph, index-making, as a way of organizing, invites addition: new vocabularies, new contributors, new discourses, and new relations — a kind of real-time distributed theory-building. Index-making welcomes users, from experts, and researchers to enthusiasts, to contribute to an ongoing discourse on fast-evolving topics. It works on an inclusionary logic rather than peer-reviewed journals' competitive and exclusionary logic. Index-making acknowledges research as a never-ending collective process, unfolding in real-time and unlimited to academic space. Therefore, index-making renders research back into a responsive, collaborative, and openly-accessible process.

It is not a complete coincidence that collective indexing shares a similar way of organization with some of the self-initiated research groups previously mentioned such as *New Models* and *Do Not Research*. From the outside, collective indexing may look identical to a call for a paper or an anthology, but as both groups have demonstrated, the community building is much faster, the spread much further, and the group composition much more diverse. With a topic as broad as internet culture, *Do Not Research* holds

online discussions where each member can lead the conversation on the subject of their expertise as it comes up. And these online discussions evolve organically into other events: reading groups, meetings, or ad-hoc podcast episodes. Thus, collective indexing creates an alternative knowledge schematic to the academic network or search engine results, giving voices to the lesser-known but equally important thinkers and ongoing discourses.

Collective indexing also streamlines DIY publishing. During the three-day *Rendering Research* workshop in Brussels (2022), participants tested out collaborative writing and fast-paced publishing. With the help of graphic designers Nicolas Storck and Julien Duerte from the School of Graphic Research ERG Saint-Luc in Brussels, we used Variapad, Markdown notepad, and other low-effort publishing tools to communicate and do simple layouts of our writing. The writing was then uploaded to a server, forming a temporary online database. Because each contribution used the same formatting rules and markdown language previously agreed upon, the designers were able to make use of modular publishing tools to quickly compile all the files into a printable document which was then sent to the risograph printer on the same day. Speed obviously does not necessarily mean quality, but the three-day experience does demonstrate the compatibility between the database and DIY publishing. A database provides the infrastructure conducive to modular design and online publishing. *The Urgent Publishing Toolkit*, hosted by the Institute of Network Culture, provides modular design principles for online publishing (Making Public). The toolkit defines modularity as both a technical production workflow and the presentation of the content and the editorial decisions made. The toolkit showcases different methods and tools, such as collage, scalar, and twine, to flexibly compile a database into a zine or any other fitting formats with new interactivities and sensibilities of reading. With digital publications, these methods make use of the hypertextual, multi-medial, and multi-modal online environment, realizing the radical vision of pioneering writers such as Ursula Le Guin and Peter Sloterdijk. In reference to Sloterdijk's idea of 'hyperessay', the toolkit highlights the role of an author as a navigator in a sea of references, quotes, and thoughts. "The most important element of writing is selecting and instead of making a linear argument about all the different inputs, the writer shows how the selection process took place and what possible pathways it affords." (Institute of Network Culture, Upside Down Inside Out) Making use of existing content management platforms, matching algorithms, and modular publishing tools, the modular design process leads to a different way of writing and reading; to other forms of telling stories and presenting research.

Underlying the movement of online DIY publishing is the vision to open-source knowledge, freeing it from journal paywalls and university libraries. Inspired by the movement, *Hyperimage Index* invites contributors who are well-published in their field to donate writings and chapters of their books so that the collective indexing will form a publicly-accessible and ever-growing pedagogical platform. It will act as a multidisciplinary alternative to existing monogenous glossaries on AI and computer vision produced by the tech giant and GPU inventor Nvidia.

Database aesthetics

'Indexing' also implies the act of retrieving data. In data science, a database index refers to a data structure that improves the speed of data retrieval. In practice, an index can be as simple as a two-column table of data points and pointers to other data points, a table of contents for a database. By segmenting the entire database into different categories or assemblages of data points, a search can be done without going through the entire database, saving computer memory and resulting in faster information retrieval. In other words, a database index acts as an interface between sections of the database, directing search queries in a more efficient manner. A database index is commonly used in relational databases. Media theorist Zachary Horton, who examines the role scale plays within mediation, asserts that this organizational operation has greater implications for knowledge production. A relational database organizes data points with no predetermined hierarchy or network structure. On the contrary, a relationship between data points emerges as a search query passes through database indices to reach its result, revealing the "intrascalar assemblages" (Horton 188).

Upon seeing the transistor, the ultraviolet wavelength, and the HIV virus grouped together in the same frame based on their scale on the website *The Scale of The Universe 2*, Horton noted:

> *This is in the first instance a database question, a query. We are given multiple objects that belong to the same class, that possess the same size attributes, but that are not ordinarily encountered together. It is a special case of a 1:1 scalar relationship. The question, more properly, is this: if the database aggregates these objects based upon the property of size, what temporal domain unifies them?* (190)

According to Horton, the database interface is an active and open-ended system for the production of new aggregates (185). Relations between the aggregated items emerge and dissolve with each search query, often in surprising combinations. A database disorients users from the usual scalar frame, the abstract space and time in which a set of typical events take place. He used the term database aesthetics to further articulate the implication of scales in mediation.

> *Database aesthetics can help us to define and understand scalar milieus as horizons for generic events — not despite their categorical flattening but because of it: the more reductive the initiation into a coded matrix of relations, the greater the potential for emergent complexity on the axes of both intrascalar aggregation and trans-scalar encounters."* (191)

Conclusion

The reason for choosing collective indexing to render my research is fourfold. Firstly, the form resonates with my research topic, algorithmic image systems, and my interest in the notion of network and scale in contemporary visual culture. The second reason concerns the database aesthetics of collective indexing, mapping utilizes network and scale to render a phenomenon much larger than humans visible. The freedom to switch between microscopic and macroscopic perspectives — trans-scalar seeing — creates a unique way of sense-making unachievable in linear writing. The third reason concerns the organizational aesthetics. Collective

indexing not only connects ideas across disciplines but creates a social network around the topic that is inherently transdisciplinary. Lastly, the database created by collective indexing is conducive to online publishing and open-source knowledge.

My proposal for rendering research in algorithmic images and visual culture is *Hyperimage Index* (working title). *Hyperimage Index* is an online collaboratively-annotated index for photography theory in the algorithmic age. The story of photography has historically been told through the notions of representation, truth, and reality on the one hand and entangled in the debate concerned with its aesthetic values on the other. While these stories are still valid, the advent of computer graphics and artificial intelligence has brought new complexity to the image discourse. As Fred Ritchin once remarked, "If the world is mediated differently, then the world is different," (9) the development of new optical media enables brand new ways of compressing our world into images and creating new information economies. Understanding these radical changes requires a transdisciplinary approach to visual studies and demands a new set of vocabularies and theoretical positions. Hyperimage Index surveys a wide range of literature and consults thinkers from different fields to collaboratively construct an atlas of ideas for algorithmic image-making. As technologies such as facial recognition, Deepfake, and ray-traced computer graphics seep into our daily lives, a critical analysis is urgently needed to fill the knowledge gap. An online open-sourced index makes the research more publicly accessible and inspires new conversations surrounding important issues in CGI, such as human visuality, knowledge, and power. *Hyperimage Index* maps out the discourse on algorithmic image systems through literature view, collective annotation, expert conversation, and invited collaboration, cataloging short-form definitions of concepts, and long-form conversations. By organizing multiple ongoing discussions into a networked database, the Index allows users to examine connections and explore the relevant topics through different scales and across disciplines, thus beginning to outline the larger-than-human system that is otherwise impossible from any individual perspective.

Notes

[1] The discourse of scale has expanded in media studies in different forms, most notably in conferences such as *Levels of Life* hosted by The Photographers Gallery and the London College of Communication, University of the Arts London (2022), *Mediating Scales* organized by Institute of Communication Studies, Université Catholique de Lille (2022), and publications such as *Photography Off the Scale* co-edited by Jussi Parikka and Tomas Dvorak (2021), amongst others.

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