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Reprogramming Modernism
From Industrial to Digital

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Abstract

The advent of digital not only fosters new possibilities in creation but also in conservation. Architectural preservation evoked in the Modern period, when mimicry, a standard method of creation was paused and the intention to preserve past notations of architecture awakened. Now, what is the future of Modernism in the Digital archive?

Digital Modern manifests the revival of this objective with actual tools. Digital proposes a new approach to history and the treatment of the past by keeping all records recallable to the present. Cloud computing proposes timeless history, where previous memory stored in algorithms is available at the level of representation. This essay shows how Modern architectural notations are explicitly inherited by the Computational era and introduce the correlation between typology and digital patterns. The period influenced by the industrial revolution and universal solutions prepared the platform for the current era influenced by the digital revolution.

To understand the relationship between the two dominant epochs, this essay relies on the notions of mimicry, rules, models and methods as modes of repetition and creation crosslinked with different stages of technological development in history. This will lead to the understanding how virtual copies create a new chapter in mimesis and provokes a new chronological approach. The research methodology does not follow a linear timeline but builds on simultaneous perspectives of the Digital Modern phenomenon.

Keywords

cloud computing, timeless history, type, pattern, mimesis

1 Introduction

1.1 Technological development and creation

Technological development has always affected architectural creation. The non-linear correlation between history and technological revolutions and the back-and-forth stimulation of these two phenomena trigger the three Vitruvian principles of creation – durability, utility and beauty (Fig. 1).

Historical events also affect technological development and social conditions. Social conditions determine the way the usage of the architectural artefact while also shaping design methods. Technological revolutions bring new materials and novel ways of fabrication, influencing communication, design tools, and the medium. The medium, in turn, impacts the design method. The manner of fabrication, design and usage generates an action-reaction force to realise creation. Where fabrication determines durability, design shapes beauty and usage proves utility. Thus, each element creates an infinite progress in the system.

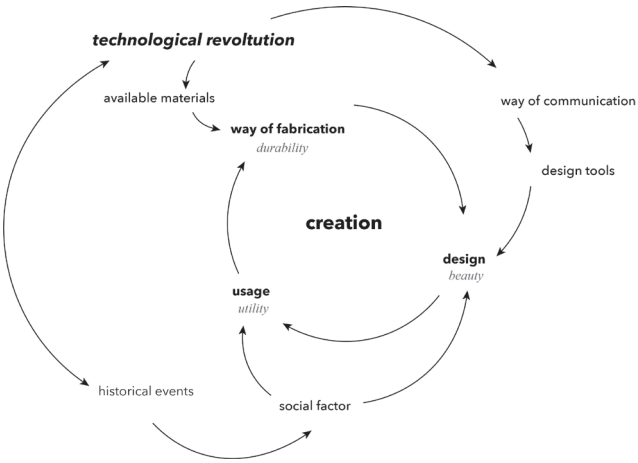

Fig. 1 Correlation between technology and creation (Bognár, 2020)

This understanding of the Vitruvian principles in correlation with broader historical events provides the basis for examining the two epochs in architecture – modern

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and digital – triggered by shifts in technological development. In order to investigate the consequences of modern in the digital age, it is crucial to understand their creation. Furthermore, by creation, see its possible avenues of survival or conservation.

1.2 Oxymoron of digital modern

Modern and digital are building on two different zeitgeist and technological developments: the earlier the industrial, the later the digital revolution. The stress between modern and digital can be examined at different levels (Table 1). Each characteristic can be seen as a consequence of technological development. The Industrial Revolution made possible the realisation of huge glass surfaces and steel structures. The material revolution triggered a shift in classical aesthetics of hierarchical building elements, which to the 20th century, have been rationalised and standardised.

The historical background of World Wars set expectations of rapid rebuilding and sheltering those in need. It has been a period of seeking universal solutions, type plans and standardisation.

The digital revolution was also highly stimulated by World Wars, where computation evolved, starting with code-breaking; however, it is different in nature. Individually coded pieces can be customised while keeping the primary method of multiplication. The material and assembly revolution created a different attitude to design.

In terms of information processing, modern builds on sorting, while digital builds on searching; hence, the earlier period is still based on human nature, the need to categorise data. In contrast, the digital does not need data compression to process all the available information in big data.

The word composition Digital Modern proposes an oxymoron, such as Gothic Baroque. Whereas zooming out of the present, digital modern can be understood as the digital physical twain transferring an already existing epoch into the computational environment instead of creating new content from scratch. This essay seeks to find the link between modern and digital by examining the main characteristics of each era while understanding the possible meanings of heritage in the age of timeless history.

Table 1 Characteristics of the modern and the computational age (Bognár, 2020)

	Modern	Computational
Technology	Industrial revolution	Digital revolution
Generalization	Universality	Customizability
Piece/whole	Discrete	Continuous
Way of production	Assembly line	3D printing
Clustering	Sorting	Searching

1.3 Understanding correlations

Mimesis in ancient Greece meant imitation in terms of reinterpretation. In architectural history, mimicry was a standard method of creation except for two periods, the Gothic architecture and the Modern Movement (Carpo, 2011). Today looking at the reinterpretation of modernism by digital tools means manifesting the shift from industrial to digital – two unique and characteristic eras, where the creation of virtual copies of the physical world is a new chapter in mimesis.

Modernism was highly influenced by the Industrial Revolution, the invention of mass production and new techniques, which became a turning point in history marked by identical copies. In Europe, CIAM united the principal architects and thinkers of the Modern Movement. The Hungarian group of CIAM called itself CIRPAC and followed the thoughts of Bauhaus. The activity of the national group focused on the housing crisis generated by political circumstances. In this context, universality and standardisation led to type plans and typization.

The digital revolution provides a different approach to architecture than ever before. In terms of heritage building conservation, it also hides new solutions. The diagram Charles Jencks created describes architecture's evolutionary attitude until 2000 (Jencks, 2000). Today's computer clouding can easily change this approach. The differences between the two perceptions are apparent. Cloud computing leads to a timeless history, where there is no need for previous memory because everything is stored in computers.

An epoch influenced by linguistics in the mirror of an age influenced by binary codes and mathematics. Several oppositions and parallel statements can be found in the oxymoron of Digital Modernism. How could Modern Architecture be adapted to today's notions in a digital archive? What does history mean in the digital age?

2 Memory, history, heritage

2.1 Origins and organisations of heritage protection in architecture

Cultural heritage is the usually irreplaceable legacy of artefacts inherited from the past, maintained in the present and bestowed for the benefit of future generations through conservation.

Architectural protection is the prolongation of material, historical, and design integrity of humanity's built heritage. As a movement, architectural conservation, in general, and

the preservation of ancient structures specifically, gained momentum during the 18th and 19th centuries. It was a response to modernism and its corresponding architectural perspective, which eschewed sentimental attachment to old buildings and structures in favour of technological and architectural progress and change. Prior to this time, most of the ancient buildings still standing had only survived because they either had significant cultural or religious import or had yet to be discovered (Podany, 2010).

Two schools have emerged in the discipline; one is conservation, and the other is restoration. Usually, the two hold conflicting views. Extending the practice of rehabilitation emphasises the retention and repair of historical materials, but more latitude is provided for replacement because it is assumed the property is more deteriorated prior to work. Both preservation and rehabilitation standards focus on preserving those materials, features, finishes, spaces, and spatial relationships that give a property its historic character. In contrast, reconstruction establishes limited opportunities to re-create a non-surviving site, landscape, building, structure, or object in new materials.

Modern heritage conservation started in the 1990s, whose leading organisations are Docomomo International, Modern Heritage Committee of the Association for Preservation Technology (APT), ICOMOS International Scientific Committee on Twentieth-Century Heritage, and modern Asian Architecture Network (mAAN) (Burke, 2021). In 2011, the Madrid Document: Approaches for the Conservation of Twentieth-Century Architectural Heritage was announced (ICOMOS, 2011).

Current technological status raises the question of whether the already existing conservation methods are valid for modern architecture. Or shall it be treated alternatively? Technical solutions of digital protection are already around, like digital acquisition techniques; 3D scanning is the process of analysing a real-world object or environment to collect data on its shape and possibly its appearance (e.g. colour). The collected data can then be used to construct digital 3D models. Digital heritage refers to the technique that uses digital media to preserve cultural or natural heritage. Virtual heritage or cultural heritage and technology is the body of works dealing with information and communication technologies (ICT) and their application to cultural heritage, such as virtual archaeology. It aims to restore ancient cultures as real (virtual) environments where users can immerse themselves.

New prospects proposed by digital technology might overwrite the usual understanding of conservation. Augmented reality as a parallel reality of the physical, material world carries innovative solutions for heritage protection. With the existence of cloud computing, timeless history is not unreachable anymore.

2.2 From canon to lexicon

The different worldview of Modern and Digital is well described by the construction of canon and lexicon. Canon supposes a way of clustering, and systematic organisation of data, whereas lexicon, originally a wordbook, provides a full vocabulary of notions.

Archives, based on their physical limitations, have always been provided with a selection of memories in a systematically clustered, labelled organisation, primarily focusing on one institution's lifetime. Selection of values to be preserved for future generations. On the other hand, lexicon is a broader overview explaining each element of a certain system. This correlates with the nature of modern clustering and the digital Big Data approach. While humans need sorting techniques to process information, computers can appropriately navigate a huge amount of data and look for particularities based on searching (Carpo, 2013).

Foucault's theory on archives provides models for investigating the history of communications and media. It offers insight into how to approach the archive of communications and media history and how one might consider communications in relation to other historical forces via the apparatus. The archive in Foucault's work is nothing so literal as rows of dusty shelves in a particular institution, but rather involves the whole system or apparatus that enables such artifacts to exist (including the actual institutional building itself). In this model, the "archive" is already a construct, a corpus that is the product of a discourse (Bate, 2007). This stand is closely related to communication and media history.

Bate (2007) argues that the notion of the archive is invoked as a mechanism for providing proof, legitimating arguments, and verifying the thoroughness of an investigation, in short, to credentialize, authorise, legitimise, and stylise the veracity and authenticity of a historical investigation. In some ways, such an ideal of the archive is rooted in the search for origins, of which Foucault is so critical.

Archive and cultural heritage are both canons of the past, which were selected to be stored and protected for the future. This approach can be liberated by the existence of Big Data and unlimited storage capacity. Today there is an opportunity to avoid filtering information and store them as digital twins in the cloud.

For many forms of media and communications analysis the potential archive is swelling due to the exponential expansion of digital storage capacity. Brief rumination upon Agamben's examples of how apparatuses work more generally would lead us to see that the archive of the apparatus comprises the sign, signifier, and technologies of inscription and maintenance (Packer, 2010).

Lexicon is an appropriate notation explaining the complexity and completeness of information and data. Where the required resource is up to the reader, not preselected by the provider.

3 From type to pattern

3.1 Modern

Modern is not only a time period but an attitude. Modern architecture, or modernist architecture, was based upon new and innovative technologies of construction, particularly the use of glass, steel and reinforced concrete; the idea that form should follow function (Sullivan, 1896); an embrace of minimalism; and a rejection of ornament, accompanied by urbanisation. It emerged in the first half of the 20th century and became dominant after World War II until the 1980s when it was gradually replaced as the principal style for institutional and corporate buildings by postmodern architecture.

The Congrès Internationaux d'Architecture Moderne (CIAM), or International Congresses of Modern Architecture, was an organisation founded in 1928 and disbanded in 1959, responsible for a series of events and congresses arranged across Europe by the most prominent architects of the time to spread the principles of the modern movement focusing in all the main domains of architecture (such as landscape, urbanism, industrial design, and many others).

The Hungarian national group of CIAM called itself CIRPAC, and at the regional level, some members were working on type plans for a particular function. Type cottages as a determinative element of the Lake Balaton landscape were realised in the 1960s. These buildings held the same spatial arrangements and were built from the same group of elements, mirroring the capacity of local industrial production (Fig. 2).

Fig. 2 Type plans of the '60s and '70s (Callmeyer and Rojkó, 1972)

Typologies rooted in the Renaissance well support Modernity's seeking of universality. The aim of creating the type was universality (Grover et al., 2019). In the view of Aldo Rossi, a member of the La Tendenza (The Trend) "types emerged from the built structure as a product of social order rather than a direct result of primitive human conditions. He considered type as being the very idea of architecture and that all theories of architecture were typological" (Rossi, 1982:p.41). In the world of Hyungmin Pai "type is a schema of spatial articulation devoid of value judgment" (Pai, 2002:pp.253–254). Architectural typology popularised by Christopher Alexander might be the ancestor of the idea based on certain rules and definite elements, which could have been combined to fulfill a certain need.

Type defined earlier in history by Quatremere and Durand understood type as a theoretical idea independent from form. As did Aldo Rossi, who considered type as a principle prior to form. While Christopher Alexander's typology based on patterns explicitly investigated formal notations and their combination. Originated in the approach of Sebastiano Serlio and Gottfried Semper, who argued that the language of typology, as architectural grammar, is the combination and manifestation of archetypal conditions (Fig. 3).

3.2 Postmodern

During the postmodern two distinct tendencies were realised between architectural theorists and designers. The first was a shift from the linguistic and representational focus of both postmodern and Derridean deconstruction towards the spatial, artistic and mathematical models of Deleuze, Foucault, Whitehead and even, to some degree Lacan. Of these initial experiments, it was the Deleuzian focus on spatial models, most of which were derived from Leibniz's monadology, that took hold in the field. The second tendency was an interest in scientific models of complexity, initially those derived from the work of René Thom and later those of Santa Fe Institute, among others (Lynn, 2004).

The development of computationalism assimilated with structuralist ideas in architecture leads toward the typological approach to design based on formal notions. The perception of natural language as a sign system is established in Semiotics, which refers to the study of sign process (semiosis) and is any form of activity, conduct, or process that involves signs, including the production of meaning (Fig. 4). The model of Charles Sanders Pierce emphasises the relation between representation and the object and the interpretant using signs as transmitting systems.

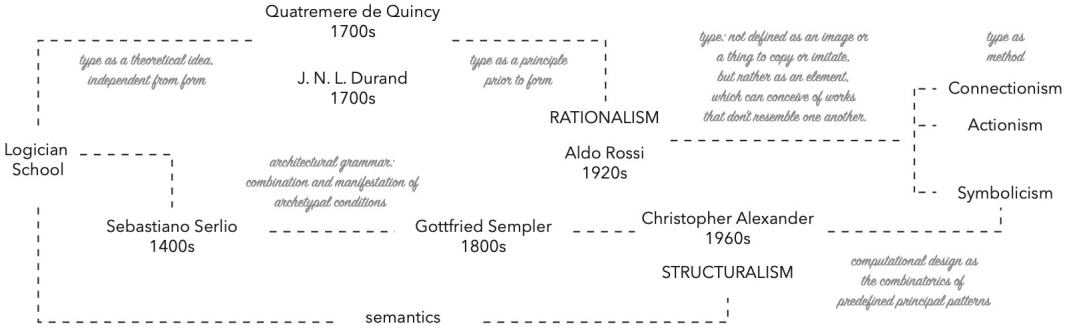

Fig. 3 Understanding of type in different periods (Bognár, 2020)

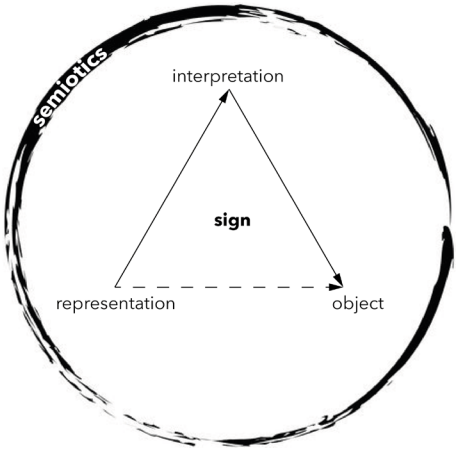

Fig. 4 Charles Sanders Peirce's triadic model of semiotics (own image based on the graphics of Bardha (2018) and Sanders Peirce (1902))

Structuralism has its roots in three main areas: linguistics, anthropology and literary analysis aimed at transmitting architectural thought in a universal sign system. The three principles of the field are:

1. totalities are explained in terms of the relations of the parts;
2. each part is defined in terms of its relations to the other parts;
3. synchronic, as opposed to diachronic analysis, is central (Poythress, 2012).

The linguistic, semantic turn materialised in architecture in the 60s and 70s and marked the way from structuralism through rationalism towards computationalism. Rules and forms, such as models and methods, appear in architecture on different scales. While structuralism deals with building scale, La Tendenza (The Trend) was interested in the larger scale of the city, which today can shift into an even more significant planetary scale through computationalism.

Structuralism examines the relationship between the units in order to explain the whole. Influenced by Saussure, Claude Levi Strauss believed in simplifying the masses of empirical data into generalised, comprehensible relations between units, allowing for the identification of predictive laws. In architecture, Team X aimed to change the CIAM's doctrinaire approach to urbanism.

The Italian rationalist school, La Tendenza, is in part a protest against functionalism and the Modern Movement, in part an attempt to restore the craft of architecture to its position as the only valid object of architectural study, and in part an analysis of the rules and forms of the city's construction. Type was not defined as an image or a thing to copy or imitate but instead as an element which can conceive of works that do not resemble one another (di Milano and Bonfanti, 1973). This understanding of type is the closest approach to today's algorithmic methodological transmissions.

3.3 Digital

As typologies were the post-communication of the artefacts, patterns predetermine the entity. Although both build on common qualities, the first is applied in physical space in relation to the ambience, while the latest can be understood by itself. Statistical, numeric descriptions justify all the intuitive processes. The scientification of architecture started with its typification and manipulation of types, such as the manipulation of signs, as seen in linguistics. Words, alphabets, symbols, and codes are all means of information transmission in a systematic way accepted by many. In order to understand the information, humans cluster and group. Since information is stored by 0s and 1s, the compression works differently.

Based on the ascertainment of Wittgenstein, it is clear that communicating by pictures or visual notions gives a clearer understanding of the speaker's idea. Compared to structuralism, digital notations achieve universality differently. The typology of Christopher Alexander was also a formal system to create clear, explicit communication. The goal of all such systems was to indicate the exact same image in the sender and the receiver.

Computational semiotics understand computer systems as sign systems (Fig. 5). Although many fundamental com-

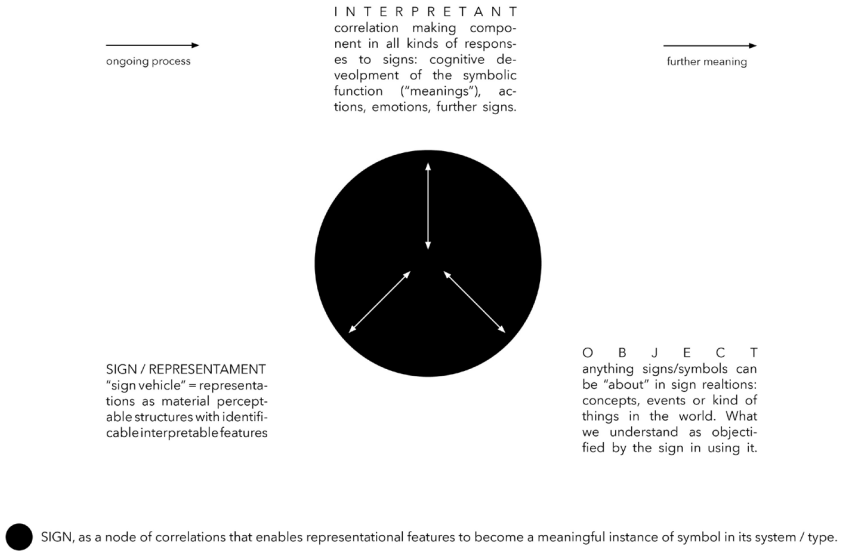

Fig. 5 Computational semiosis (own image based on the graphics of Bardha (2018) and Irvine (2018)

puter science principles apply binary states, Peirce discovered that the human social-cognitive use of signs and symbols is a process that can never be binary; it is never either science and facts or arts and representations. Rather, the process of understanding symbols and signs is a process that covers everything from language and math to scientific instruments, images and cultural expressions (Bardha, 2018). From the architectural perspective, image and vision, as the means of sign or representation in computational semiotics have a significant role. The extensive use of AI in terms of the output dissolves the strictly typological segmentation of architecture, while on the other hand, for processing input, it also uses types as classification.

Pattern recognition, a branch of machine learning, is the automated recognition of patterns and regularities in data (Wikipedia, 2019). It has applications in statistical data analysis, signal processing, image analysis, information retrieval, bioinformatics, data compression, computer graphics and machine learning. Pattern recognition has its origins in statistics and engineering; some modern approaches to pattern recognition include machine learning due to the increased availability of big data and a new abundance of processing power. However, these activities can be viewed as two facets of the same field of application, and together they have undergone substantial development over the past few decades. The following is a modern definition of pattern recognition:

"The field of pattern recognition is concerned with the automatic discovery of regularities in data through the use of computer algorithms and with the use of these regularities to take actions such as classifying the data into different categories" (Bishop, 2006:p.1).

Machine learning approaches to pattern recognition have a broad palette today. Pattern recognition systems are, in many cases, trained from labelled "training" data (supervised learning), but when no labelled data are available, other algorithms can be used to discover previously unknown patterns (unsupervised learning). Machine learning is strongly related to pattern recognition and originates from artificial intelligence. Knowledge Discovery in Databases (KDD) and data mining focus more on unsupervised methods and a stronger connection to business use. Pattern recognition focuses more on the signal and considers acquisition and Signal Processing. In pattern recognition, there may be a greater emphasis on formalising, explaining and visualising the pattern, while machine learning traditionally focuses on maximising the recognition rates. Yet, these domains have evolved substantially from their roots in artificial intelligence, engineering and statistics, and they have become increasingly similar by integrating developments and ideas from each other.

In machine learning, pattern recognition is the assignment of a label to a given input value. In statistics, discriminant analysis was introduced for this same purpose in 1936 (Fisher, 1936). An example of pattern recognition is classification, which attempts to assign each input value to one of a given set of classes (for example, determine whether a given email is "spam" or "non-spam"). However, pattern recognition is a more general problem that encompasses other output types. Other examples are regression, which assigns a real-valued output to each input; sequence labelling, which assigns a class to each member of a sequence of values (for example, part of speech tagging, which assigns a part of speech to each word in an input sentence); and

parsing, which assigns a parse tree to an input sentence, describing the syntactic structure of the sentence.

Pattern recognition algorithms generally aim to provide a reasonable answer for all possible inputs and to perform the "most likely" matching of the inputs, taking into account their statistical variation (Schreuder, 2014). This is opposed to pattern matching algorithms, which look for exact matches in the input to pre-existing patterns. A typical example of a pattern-matching algorithm is regular expression matching, which looks for patterns of a given sort in textual data and is included in the search capabilities of many text editors and word processors. In contrast to pattern recognition, pattern matching is not generally a type of machine learning; however, pattern-matching algorithms (especially with fairly general, carefully tailored patterns) can sometimes succeed in providing a similar quality output of the sort provided by pattern-recognition algorithms (Fridman, 2020).

4 A new chapter in mimesis

4.1 From copy to representation

Mimesis, imitation, as reinterpretation was a standard method of creation in architecture. After the Middle Ages, in the Renaissance, mimesis was a common way to recall Greek and Roman architecture (Carpo, 2011). Modern movement stands as an exception building on new architectural notations. Industrial mass production, identical copies, and the use of prototypes, moulds and cast needed innovative solutions. Digital, on the other hand, brought mass customisation and dissimilar copies. Using computational expressions, binary codes and algorithms, each copy can be unique, with a slight modification in the result, but following the same method. The medium used influences the method of creation; thus, the shift from industrial to digital leads to a shift from model to method.

Today looking at the reinterpretation of modernism by digital tools means manifesting the shift from industrial to digital – two unique and characteristic eras. Creating virtual copies of the physical world is a new chapter in mimesis.

The medium used to communicate the idea not only influences the actual understanding of the design process but also the perception of the result. The triplet of rules, models and methods are the three routes of creation in different time periods of technological development. Rules carried by words, visual-mediated models and methods transmitted by algorithms are distinct modes of learning and reproducing antecedents. In digital creation, multiplication and copies are generated by following the methods, with always similar but not necessarily identical results. Applying method-based design, ideas ciphered into algorithms can be defined individually instead of indicating general common ground.

Daniel Kohler claims in a Jessen Lecture that there is "no copy anymore, only representation" (Texas Architecture, 2020). Computer Vision based on the operation of neural networks makes the projections more trustworthy. Visualisation, the closest platform to transmit the idea based on statistical computations, can provide a readable projection. New notations can be expressed based on the representation of Big Data.

The triple connection of archetype, architecture and algorithm shows the importance of vision towards each corner point (Fig. 6). Assuming that archetype is the origin, communicating it in the formal appearance of architecture through models is the most image-based thread. While expressing archetype in algorithms through a method is the synthesis of mathematics and representation. And finally because visual representation is less meaningful for computers, the scale of visualisation increases towards architectural expressions.

4.2 Modern notations inherited in the computational age

With the development of computation, Computer Aided Design in architecture came to life. Those entirely related to architecture, like ArchiCAD or Revit, rely on a particular collection of elements stored in libraries. These elements are created based on the current catalogue. Columns, slabs, and walls mimic modernist notations. Even in the default furniture library, we can find the Barcelona chair by Mies van der Rohe or the Red-Blue Armchair by Gerrit Rietveld.

This is how modern is filtered in the digital realm through ArchiCAD. What is more, investigating the techniques of machine learning (ML), Deep Learning tools

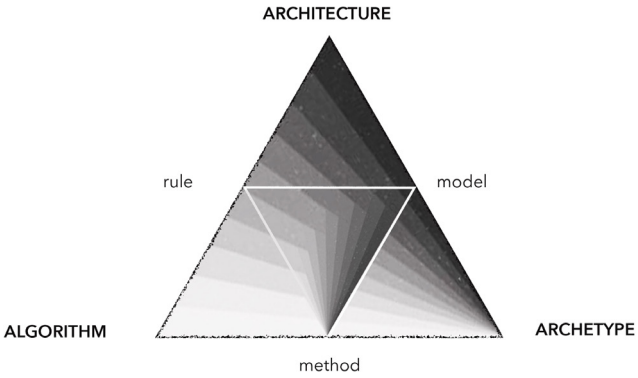

Fig. 6 3A – The role of vision in synthesising the Algorithm, the Archetype and Architecture in relation to the three routes of creation (Bognár, 2020)

use plans created by ArchiCAD to learn from. ML labels and recognises elements based on layers and element libraries. Thus modern goes in digital history by simply learning from its formal notations.

The other branch of computational design, parametricism, avoids these formal notations of certain well-defined elements, but based on it, it is much harder to learn and understand its principles for a ML algorithm. Learning from datasets of architectural artefacts created after the second digital turn – meaning after coding and tailored computational outputs became widespread – can lead to difficulties for machine learning algorithms. Finding the common ground in such a diverse visual data set is more challenging compared to finding similarities in a group of buildings designed in the same typological concept. There are no clearly labelled general features, only custom solutions.

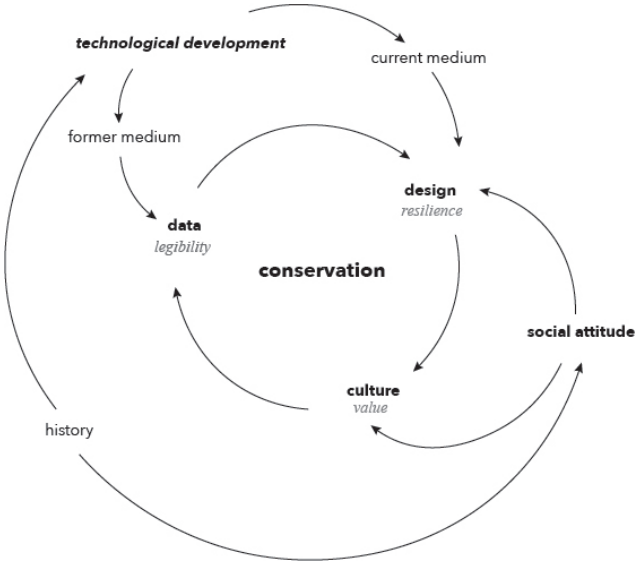

Fig. 7 Principles of conservation (Bognár, 2020)

5 Conclusion

5.1 Technological development and conservation

Technological developments influence not only creation but also conservation. This research has shown how data handling is changing due to the advent of computation and how this shift affects chronological perception. The ongoing transformation can open new approaches to heritage protection and maintain the modernist canon in the digital lexicon. Conservation relies on creation, the amount and type of data and the medium to communicate ideas. Which components are triggered by societal and technological development, such as understanding culture at a particular zeitgeist (Fig. 6)? Compared to the graph of creation (Fig. 1), conservation has different principles deriving from the same basics (Fig. 7). In this case, social factors and technology appear in the available data, information and culture as a source of the zeitgeist.

If modern is a victory of space, digital is the victory of vision. Of the human senses, we most rely on visual impulses in the computerised era (Pallasmaa, 2005). Hearing, touch, and smell have become secondary senses.

Digital conservation can be different from earlier habits, such as in the Charter on the Preservation of Digital Heritage of UNESCO, which defines digital heritage as embracing "cultural, educational, scientific and administrative resources, as well as technical, legal, medical and other kinds of information created digitally, or converted into digital form from existing analogue resources" (UNESCO, 2003:Annex1:p.1).

5.2 Computation as digital modern

Digital modern currently embodies the utilisation of CAD software, with a perspective to survive in Deep Learning. CAD software, with its inbuilt libraries, provides a canon, a selection of elements inspired by the modern to choose and build on. Through these libraries and layer structures, modern soaked into the digital not only formally but systematically as well. The ArchiCAD file structure and element library mimic modern notations.

Since Deep Learning algorithms, the most appropriate learning data set is delivered from 3D models, with clear layer structure and material setup, the notations inherited from modern technology will also be embedded in artificial intelligence and computer vision. Apart from formal inspirations, the spatial logic of spaces can also be inherited.

Reprogramming modernism offers a concept to canonise a selection of chosen elements and an entire approach to architecture. The notations of free space and flexibility survive with the timeless meaning of forms. (Texas Architecture, 2020) In the digital era, there is no difficulty in representing shapes calculated by binary codes.

This phenomenon already appears in VR spaces and the Metaverse. The previous one still keeps the connection with physical reality extending its potential, while the latter creates an entirely new reality where physical constraints are not necessarily applied. While Metaverse is freed from history and gravity, VR spaces can accommodate Digital Twins in creating a permanent present.

5.3 Permanent present

The understanding of history and time has shifted in the past, from the ancient cyclical approach towards the irreversible linear timeline of Enlightenment to the 20th Century evolutionary parallel architectural timeline of Charles Jenks (Fig. 8). Today we have the same access to each period in the virtual space. Now the scattered timeline brings a present where we can reach every time period permanently (Fig. 9).

Computation and algorithmic thinking provide a new historical approach by representing the unrepresentable. Recent technological revolution of the digital with endless computational capacity and available data provides a parallel reality, where swapping between time zones and epochs is up to the receiver. Mimesis, as an accurate, even illusionistic representation of the visual appearance of things, receives new interpretations through computer vision. As modernism was a progressive way of thinking to generate, improve and remodel the environment, accommodating the victory of space, digital hosts the victory of vision in a historical continuity building on the discrete lexicon of the past.

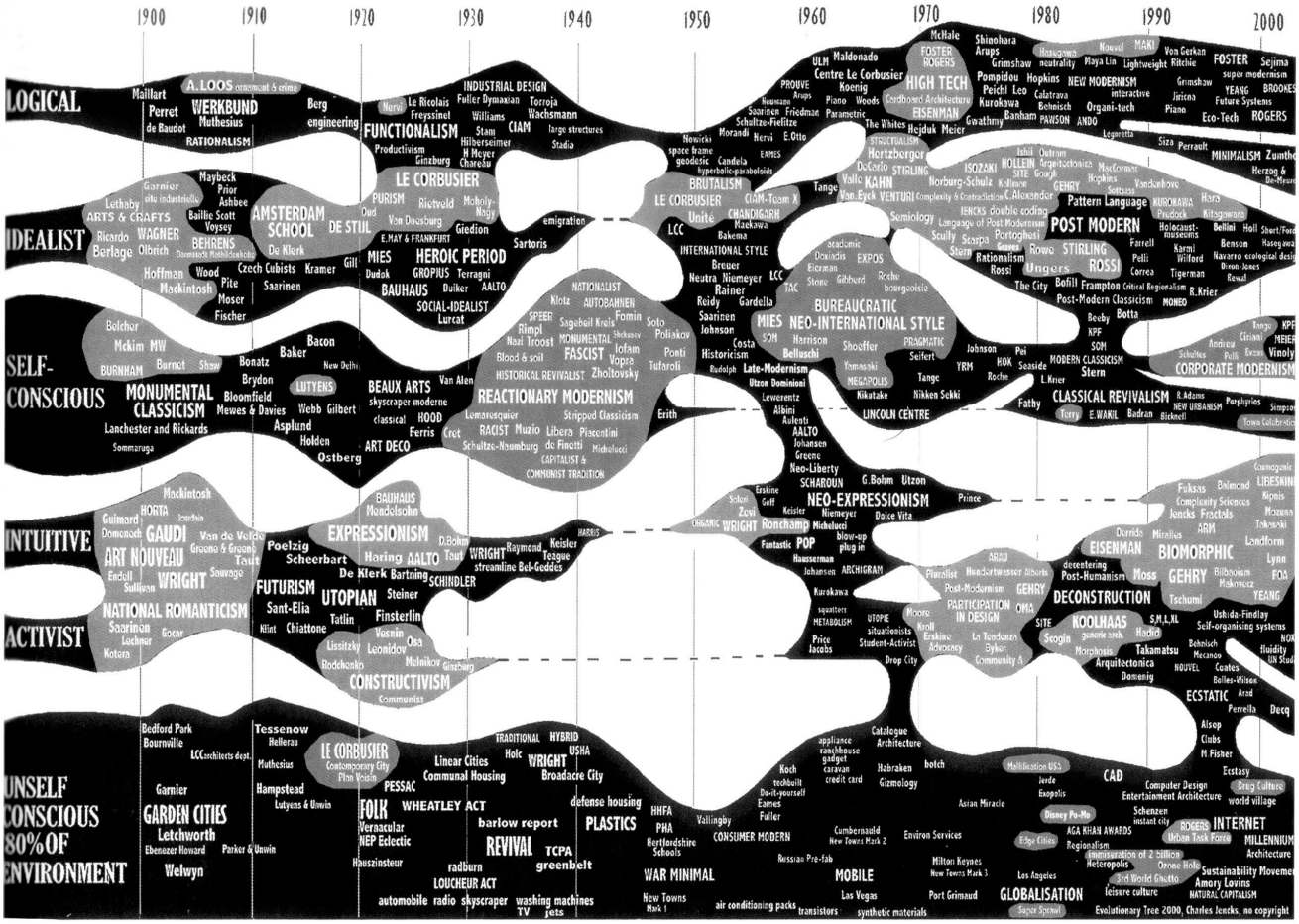

Fig. 8 The century is over. Evolutionary tree of Twentieth-Century Architecture. It is revised version of the earlier, 'predictive' version, 'Evolutionary Tree to the Year 2000' published in Charles Jencks' Architecture 2000: Predictions and Methods (1971) (Jencks, 2000)

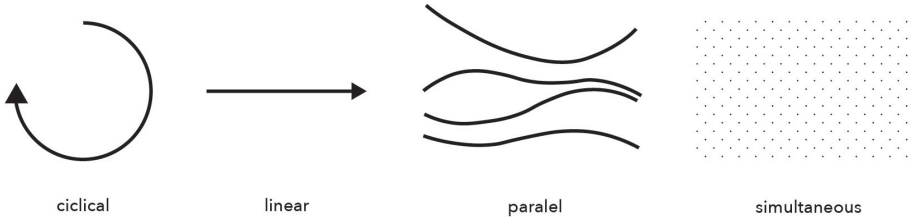

Fig. 9 Perspectives on chronology (Bognár, 2020)

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