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A Theoretical Model for the Design of a Transcultural Visual Communication System in a Posthuman Condition

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A Theoretical Model for the Design of a Transcultural Visual Communication System in a Posthuman Condition

by

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Author's declaration

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Committee.

A programme of advanced study with the Planetary Collegium was undertaken. Relevant scientific conferences were regularly attended at which work was presented. Work was also presented at invited university lectures and exhibitions, and several papers were prepared for publication.

Haytham Nawar
25 October 2016

Word count of main body of thesis

The main body of the thesis consists of 43, 728 words.

Presentations, publications, and conferences attended

Planetary Collegium Research Sessions

Between 2011 and 2014 I have taken part in nine research sessions, lasting ten days each. Each research session included a presentation of my research and a written response to the critique and questions of the supervisors and research colleagues, and also included tutorials with my director of study, Prof. Roy Ascott and thesis supervisors, Prof. Mike Phillips, and Prof. Jane Grant.

Conferences, symposiums and publications

2016

- Ars Electronica Festival, Symposium Iii: Art And Science At Work, Linz, Austria. Presentation: Bridging of Audiences and Professionals Through Art at Cairotronica.
- Future Innovators Summit, Creating agendas for tomorrow, Linz, Austria. Panel: Future Humanity, Presentation: "How do we become more human?"
- Fak'ugesi Festival, Wits University, Johannesburg, South Africa. Presentation: What happens at CairoTronica?

2015

- Granshan Conference 2015, Global Design In Practice, University of Reading, UK. Presentation: *Vernacular Type Design for Arabic Speaking Countries*. (Speaker).

2014

- ISEA 2014 The 20th International Symposium on Electronic Art, Dubai, United Arab Emirates. Paper: *Rea'location* (Published Abstract).
- AtypI Barcelona 2014 Museu del Disseny, Barcelona, Spain. *Cross-CulturalCommunication: from Alphabets to Pictographs* (Speaker/Published Abstract).

2013

- 12th International Meeting of Art and Technology: Poetic Prospective, University of Brasilia (unB) and the Federal University of Goias (UFG), Brasília, Brazil. (Speaker).
- Encontro Internacional de Pesquisadores em Design: Patterns: forma, formação e informação, Universidade Anhembi Morumbi, Campus Morumbi, São Paulo, Brazil.

- Multimodal Interfaces: Designing Across Boundaries, HCI International 2013 in Las Vegas, Nevada, USA. Paper: *Multicultural/Cross-Cultural Emotional Design: The Usage of Pictograph sto Design Emotional Interactive Environments* (Published).
- From Virtual to Real: International Conference on Extended Arts (XARTS 2013). University of the Aegean, Department of Product and Systems Design Engineering, Syros, Greece. (Speaker)

2012

- *The Book about Xu Bing Book From the Ground* (English and Chinese Edition) Edited by Mathieu Broysevicz. The MIT press, Cambridge, Massachusetts, USA, Guangxi Normal Univesity Press, China. *Xu Bing: Cross Culture Shift*. (Published)
- MutaMorphosis II: Tribute to Uncertainty Conference, Organized by CIANT. Hosted by New Stage of the National Theatre, Prague, Czech Republic. Paper: Tribute to Uncertainty: Post-Humanism and Trans-Culturalism. Trans/Multicultural Visual Communication System in a Posthuman Era. (Speaker).
- iStream eText: words in motion, International Conference Planetary Collegium CAiiA and the Milan Node NABA. Of Plymouth University, Plymouth, UK. Paper: *Typos, The Visual Representation of Text* (Speaker/Published).
- Technoetic Telos: Art, Myth and Media, International Research Conference on Media Arts in the Series Consciousness Reframed: Art and Consciousness in the Post-Biological Era. Hosted by Ionion Center of the Arts and Culture, Kefalonia, Greece. Paper: *Multicultural transposition: From Alphabets to Pictographs Towards Semantographic Communication* (Speaker/ Published).

2011

- CR12 Presence in the Mindfield | Art, Identity and the Technology of Transformation, Centro Cultural de Belém Lisbon, University of Oporto and the University of Aveiro. Lisbon, Portugal. Paper: *Identity and Integration on the Verge Of Visual Multiculturalism* (Speaker/Published).
- Arab Spring | Designing Politics Hearing, Hochschule für Gestaltung HfG in Ulm, Germany. Paper: *Protest by Design* (Speaker/ Published online).
- Transcultural Tendencies | Transmedial Transactions - International Research Conference on Media Arts in the Series Consciousness Reframed: Art and Consciousness in the Post-Biological Era. Shanghai Institute of Visual Art, Fudan

University, China. Poster Exhibition and Paper: *Multilingualism, Visual Integration and Trans-culturalism* (Speaker/Published).
- Contemporary Art & Investment Magazine, Article: *Multilingualism, Visual Integration and Trans-culturalism*, Shanghai, China. Issue: 57/ 09-2011 (Published).

2006
- The 5th Egyptian International Print Triennial Symposium in Cairo, Egypt. Paper: *The Shift Toward the Digital Print in Future Printmaking Art* (Speaker/ Unpublished).

Lectures and workshops given
2015
- "Arabic Script" North and South Project organised by Bibliotheca Alexandrina, Beit Al Sennari, Cairo, Egypt.

2013
- "Digital Art in Egypt in Practice and Research/Di-Egy Fest 0.1 Organizational Perspective", Signalraum für Klang und Kunst, Munich, Germany.

2012
- "Archives of an Artist" seminar, Saad Zaghloul Cultural Centre, Cairo, Egypt.
- "Communications through signs", joint workshop: KISD Köln International of Design and Faculty of Applied Sciences and Arts, German University in Cairo, Egypt.

2011
- "Unfinished Revolution" workshop in Arab Spring | Designing Politics Hearing, Hochschulefür Gestaltung HfG in Ulm, Germany.
- "Art, Languages and Mathematics" visiting Lecturer in Art|Sci Center+Lab, Parsons: The New School of Design, New York, USA.
- "From Here" multilingual design exhibition and workshop about the 18 Days of the Egyptian Revolution, F+F Schule für Kunst und Mediendesign, Zürich, Switzerland.

2010
- "Type in Motion" Typography and Interactive Media Workshop in Bilingual Design: A Bridge Between the Middle East and Western Europe, Hochschule Ulm, Technik Informatik und Medien, Ulm, Germany.

Exhibitions

Selected International Group Exhibitions

- The Seven Days, The Heavens and The Earth, Gallery Ward, Art Bahrain in Manama, and Art Stage Singapore, 2016.
- "The Seven Days, The Heavens and The Earth", In the Eye of Thunderstorm Exhibition, Venice Biennale, Italy, 2015.
- "Moon of the Poor" Bibliotheca Alexandrina International Biennale For Miniature Graphics, Egypt, 2015.
- Contemporary Visual Art Carnevale in Egyptian Academy of the Arts in Rome, Italy.
- "BreadMatters" Crossing Boundaries Intersecting the Grain, ARTos Foundation, Nicosia, Cyprus, 2014.
- "Poseidon's Pull Project", Ionian centre for art and culture- kefalonia, Greece and Washington State University Museum of Art in Pullman, Washington, USA. 2013
- "Reliving the Myth of Melissani" The Melissani/Pan Cave lake Project, Kefalonia, Greece, 2012.
- "Does Europe exist? - Citizen Middle-East" Artos Foundation Nicosia, Cyprus. 2012
- "Familiar Features" Contemporary Egyptian Art, FA Gallery, Kuwait, 2011.
- "Egyptian Contemporary Art Exhibition", Pretoria, Johannesburg, South Africa. 2010.
- "Contemporary Egyptian Graphic Art Exhibition", Boushahri Gallery, Kuwait, 2010.
- "Contemporary art from Egypt", Parallel to The Book Fair in Turin, Italy, 2009.
- "Meeting the Other" 2009:
    - International Education Gallery, University of Richmond, Virginia, USA.
    - Gallery of School of Art and Design, University of Michigan, USA.
    - Honors College Gallery University of Akron, Ohio, USA.
    - Isis Gallery, University of Notre Dame, South Bend, Indiana, USA.
    - Rotunda Gallery, University of Nebraska-Lincoln, Nebraska, USA.
- "Undercurrent", contemporary art from Egypt, Art Sawa Gallery, Dubai, UAE, 2009.
- Sense of Architecture labs, Scuola dei Mercanti Cannaregio, Venice, Italy, 2008.
- "Void" The Spatial Design Project, 2008:
    - KGIT Korean German Institute of Technology, Seoul, South Korea
    - National Museum of Emerging Science and Innovation, Tokyo, Japan.
- "Art in Unusual Place" Light Performance, European Cultural Capital Vilnius, Lithuania, 2008.
- "EVERYVILLE" The 11th International Architecture Exhibition, Venice Architecture Biennale, Italy, 2008.

- “Wunderland”, Château de Rue, Fribourg, Switzerland, 2008.
- “Egyptian Artists Coincidence”, Progr, Bern, Switzerland, 2008.
- “Out of the Circle”, Anbar Bureau, Damascus, Syria, 2008.
- “Mediterranean Dialogues”, Jardins et Donjon de la Citadelle, Saint Tropez, France, 2007.
- “Los Mejores Artistas Egipcios Contemporáneos”, El MUBAG, Alicante, España, 2007.
- “The Egyptian Contemporary Art Exhibition”, Sarajevo, Bosnia and Herzegovina, 2006.
- The 12eme Biennale Internationale de La Gravure Et De Nouvelles Images de Sarcelle, Val de France, 2005.

Selected National Group Exhibitions

- The National Graphic Art Exhibition, Cairo, Egypt, 2016.
- The Salon of Drawing, Gezira Art Centre, Cairo and Fine Arts Museum, Alexandria, Egypt, 2015.
- Silver Jubilee of Youth Salon Exhibition, Cairo, Egypt, 2014.
- “Still Valid”, Sharjah Art Gallery, American University in Cairo, Egypt, 2011.
- “Edge Sentiments” Al Masar Art Gallery, Cairo, Egypt, 2010.
- “Il corpus homanus”, Al Masar Art Gallery, Cairo, Egypt, 2009.
- “Where are you now?” Townhouse Gallery, Cairo, Egypt, 2009.
- “The Egyptian Fine Arts In 100 Years” 1908 - 2008, Cairo, Egypt, 2008.
- The Bibliotheca Alexandrina 3rd International Biennale for the Artist’s book, Egypt, 2008.
- The Annual Salon of Youth, Egypt. 15th, 16th, 17th, and 18th, 2003-2007.
- “Stars of the Day”, Horizon One Gallery, Cairo, Egypt, 2006.
- “Die Erzählung Ist Aslam/Aslam Al Haky “ and “Es War ein mal ein tag/Kan zaman” projects, Cairo, Egypt, 2005.
- The Egyptian International Print Triennial, Cairo, Egypt. 4th, 5th in 2003, 2006.
- The Nile Salon for Photography, Cairo, Egypt. 4th, 5th in 2002, 2004.
- The Annual Salon of Small Art Works, Cairo, Egypt. 3th – 7th in 1999-2004.
- “Haus Der Begegnung - Second Dimension”, Goethe Institute, Cairo, Egypt, 2004.
- Egyptian Graphic Art in the 20th century, Bibliotheca Alexandrina, Egypt, 2004.
- The National Exhibition for Fine Arts, Cairo, Egypt. 28th, 29th in 2003, 2005.
- The 43rd Pioneers Exhibition, Fine Arts lovers Association, Cairo, Egypt, 2003.
- “Shaial Masr/Porter of Egypt”, Cairo and Alexandria, Egypt, 2009, 2012.
- “Shifting Senses”, Goethe Institute Cairo, Egypt, 2009.
- “Emergency”, Gezira Art Center, Cairo, Egypt, 2006.

Memberships

- Member, Nomination Committee, (New Media Art) Prince Claus Awards, Prince Claus Fund for Culture and Development (PCF), Amsterdam, the Netherlands, 2016.
- Jury member in The Granshan International Competition for Non-Latin Type Design, 2015
- Jury member in the 25th Youth Saloon, Ministry of Culture, Egypt, 2014.
- Jury member in XinYiDai: An International University Students, Hong Kong Open Printshop, Hong Kong, 2014.
- Jury Member, Selection Committee, Reviwer, for the Egyptian Student Program, Binational Fullbright Commission in Egypt., 2014-2016
- Member in ATypI (Association Typographique Internationale) USA.
- Member in TDC Type Directors Club, NY, USA.
- Member in syndicate of plastic arts, Egypt.
- Member in Cairo atelier for artists and writers, Egypt.

Abstract

This dissertation follows an interdisciplinary approach that weaves practice and theory in the disciplines of visual communication, semiotics, cultural studies, linguistics, and new media art.

The research methodology is practice-based located within a historical and contemporary context that allows for artistic experimentation and new knowledge to be generated through reflected creative practice

This research proposes a context within which society can develop a transcultural means of communication with the objective of gaining completely unambiguous forms of understanding. This research explores the possibility of an open source scaffold for pictorial language that fosters self-enhancing diversity of production models, communication paths, and interactive communities.

The dissertation explores research strategies and visual practice in relationship to a proposed global use of a common system of visual semantic decoding that would allow for visual synthesis by individuals from diverse cultural backgrounds.

It is proposed that a shared collective knowledge of signs, symbols, and pictographs, supported by the advancement of future communication and information systems, can lead to a visual communication system that will be universally accepted.

There is a historic, on-going and collective consensus on the need for a universal language in the near-future posthuman condition. In answer to this need, this dissertation contextualises and goes on to explore a realised case study of a practice-based solution for a universal pictorial communication system. The system may at times seem ambitious and abstract, however, it aims to include all cultures of the world, seeking to establish a direction that identifies and locates cultural similarities over cultural difference.

This practice-based enquiry proposes a direction that should maintain coherence, logic, and veracity in order to develop a pictographic communication system that is a valid representation of the human experience in a posthuman condition.

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Chapter Three: Methods of constructed pictographic communication systems

Chapter Four: Linguistic signs in visual communication

Chapter Five: Trans-culturalism and posthumanism

Chapter Six: Conclusion

Executive Summary

This section provides a compressed summary of the theoretical narrative used to propose a theoretical model for the design of a transcultural visual communication system in a posthuman condition.

Chapter One is an Introduction to the thesis and identification of the field, explaining methodology and goals and after the thesis statement. Summarising the contribution to new knowledge and research summary.

Through the analysis of pictographic writing systems, Chapter Two investigates the linguistic approach through the study of the pictographic, ideographic, logographic writing systems starting from Proto-writing, to Mesopotamian writing systems, through Egyptian hieroglyphs, Mesoamerican writing systems such as Maya script, Zapotec writings, Isthmian script/Epi-Olmec script, Mixtec and the Nahuatl. Also the Dongba symbols - Naxi script, the Nigerian Nsibidi, and the preaching Testerian catechism.

Moreover, the chapter presents an analysis of ancient Chinese characters from 6500 BC. The chapter moves from the natural languages to the constructed fictional scripts, with a selection of fictional writing systems used in books, films and computer games. Such as Utopian alphabet, Aurek-Besh for Star Wars, Atlantean from film Atlantis: The Lost Empire, Interlac DC Comics language of the United Planets, and Hymmnos for the video game series Ar Tonelico.

Chapter Three explores last century's methods of constructed pictographic communication systems whose makers have the intention of being universal visual designers, artists and engineers, starting historically with the first Emoticons, analysing the Eastern styles (Japanese, Korean and Chinese) and western styles until its development with current forms such as iConji and the Emojis. Pictographic communication systems such as Blissymbolics and more informational approaches such as the Isotype International picture language are considered along with other approaches such as the Nobel Universal Graphical Language and the iconic language Pictoperanto, inspired by Bliss system, as well as the LoCos Universal Visible language, and Earth Language.

The thesis examines artistic and experimental projects such as Adrian Frutiger's Universal Mean Perception and Xu Bing's project 'Book From the Ground', as well as Juli Gudehuse's pictographic interpretation of The Book of Genesis, The Elephant's Memory and the pictograms of the Noun Project. The chapter includes all visual/pictographic historical messages that are intend to communicate with future humans, such as the WIPP Warning markers.

Chapter Three also addresses the debate on universal facial expressions, and Chomsky's universal grammar theories.

In Chapter Four, the science of semiotics is introduced and its use in visual communication through explaining the linguistic signs in a comparison between Saussure's, Peirce's theories.

The chapter continues with Barth's theory and legitimate/official languages and unofficial language conditions. This chapter examines the role of the reader in the open work theory of Umberto Eco and explains, in particular, the semiotics of pictographic communication and the cognitive approaches to pictographs.

Chapter Five defines what Culturalism is, and discusses the terms Transculturalism versus Multiculturalism, as well as Cultural identities. The research moves to describe what is a trans/multicultural city (place) and explains the city as a palimpsest in an introduction to the dystopian posthuman condition. Examples derived from film are given, such as *Children of Men, Blade Runner, Elysium* and from literature such as that of the Cyberpunk genre.

The thesis examines the term trans/posthumanism and, in particular, the cultural posthuman and posthuman communication in Science Fiction Reality and the Singularity as a Physical Reality and singularitarian transhumanists.

Chapter One
Introduction

1.1 Introduction

1.2 Identification of field

1.3 Methodology: Practice-based

1.4 Motivation and intent

1.5 Contribution to new knowledge

1.6 Compressed summary of the theoretical narrative

1.1 Introduction

Gottfried Wilhelm von Leibniz (1646-1716) was a German polymath and philosopher, who among other areas of interest, was concerned with the subject of a universal language. Leibniz scholars agree that the intention behind his *Characteristica Universalis* (Latin term commonly interpreted as Universal Character) was to be a form of pasigraphy or ideographic language (Jaenecke 1996). *Characteristica Universalis* is a universal and formal language formulated by Leibniz in 1676.

Characteristica Universalis was to be based on a rationalised version of the 'principles' of Chinese characters, as they were understood by Europe in the seventeenth century. Prospectively, it was common to find the *Characteristica Universalis* associated with universal language projects such as *Esperanto*, or auxiliary languages such as *Interlingua*, and other projects such as Gottlob Frege's (1848-1925) *Begriffsschrift*. The global expansion of European commerce in Leibniz's time provided mercantilist motivations for a universal language of trade so that traders could communicate with any natural language. Leibniz aimed at having one alphabet of human thought, a universal symbolic language (characteristic) for Natural Sciences, Mathematics and even Metaphysics.

The aim of this research is to locate the direction that research and development of universal language for the posthuman era could take through the contextualisation and realisation of associated practice.

Many scholars and futurists, such as Arthur C. Clarke (1917-2008), Hans Moravec (b. 1948), Raymond Kurzweil (b. 1948), and Francis Fukuyama (b. 1952), agree that our future is headed towards a posthuman future that will be delineated by a renewal of the Renaissance ideals that marry design and precision engineering with intellectual and philosophical virtuosity. The human will come under rejuvenated investigation by multidisciplinary minds that will examine ways to augment it. The ideal of human nature will come under scrutiny by a critically aware society that, through self-appraisal.

In the past two decades the concept of the future posthuman has emerged within philosophy, science fiction, cultural studies and contemporary art. Since it is co-existent with the growth of advanced medical and communication technologies, the

posthuman is framed by ideas of mutation, evolution and the development of a species that re-writes what is generally conceived as human. The definition of the posthuman draws on both humanist and anti-humanist concepts that suggest a profound paradox. (Clarke 2009).

As human nature evolves, so do the elements that represent and define it. Everything from mosaics to machines, Renaissance philosopher Mirandola (1463-1494) to more contemporary philosophers such as Hubert Dreyfus (b. 1929) and John Searle (b. 1932) are ever-changing constituents that have sought to interpret but a fraction of human nature, as it exists.

The history of posthumanism has no obvious beginning, middle or end point in philosophical thought. Indeed, the current stage of theoretical interventions on this topic seems comparable to where postmodernism was located in the early 1990s. Indeed, this analogy extends to the potential divisiveness of the concept within and across disciplines.

That being said, there are several instances across the history of philosophy that deal particularly with appeals to posthuman idea(l)s. In as much as posthumanism is a specific reading of the history of philosophy; it is also an attempt at reforming philosophical views about what it means to be human in the context of emerging technologies.

Essential to the social discourse surrounding many emerging technologies is the idea of the accelerating society (Virilio 1977, 1995). Posthumanism may have the capacity to become a relevant and distinct philosophical paradigm seeing as how many scholars and authors from across various disciplines have theorised posthumanism as addressed previously in chapter five.

In conclusion, we are still in the process of becoming posthuman in the sense that these disconnected perspectives have yet to be written into its historical development, where, for instance, posthumanism is understood as a critique of humanism.

It is argued that, “the transhuman condition is not about the transcendence of the human being, but concerns its non-teleological becoming in an immanent process of

“anthropological deregulation”’ (Pearson 1997b, p. 163). Nevertheless, while it would be tempting to characterise philosophical posthumanism as essentialist and cultural posthumanism as pluralist, this would be too hasty a judgement.

Thus, an historical analysis of posthumanity cannot be grounded solely in technological transformation. Rather, it must be more broadly described as part of a set of interconnected discourses and philosophical claims surrounding concepts of mind, body, nature and artifice. It must take into account the historiography of concepts that have emerged and the cultural, political and media instantiations through which moral claims about a shift of humanisms can be asserted.

Posthumanism may be characterised as a philosophical stance about a ‘perpetual becoming’ given that a set of boundaries and our cultural relationship to them can mark the philosophical project of posthumanism.

1.2 Identification of field

Keywords: linguistics, writing systems, communication theory, visual communication, pictographs, semiotic theories, cultural studies, transculturalism, multiculturalism, transhuman, transhumanism, posthuman, posthumanism, singularity, artificial intelligence, universal language, super intelligence and new media.

1.3 Methodology: Practice-based

Design studies are a relatively new discipline, which today amplifies its presence in a multifactor environment of traditional design specialisms, and includes the educational research field. Introducing practice-based as a method to create transcultural communication system allows a thorough exploration through theoretical and practical approaches.

Art and design theorist Cordula Meier (b. 1960) says a design theory has "the task of connecting the sciences, which is fundamentally necessary for professionalization of the designer. The design theorist thereby becomes the responsible navigator through the knowledge landscapes, always looking at the situation concerning the needs of the design." (2003, p. 36).

Furthermore, the research refers to the science of semiotics, and analyses signs in the

context of visual communication. “Semiotics is the explicit heart of graphic design theory, understanding of semiotics is essential for anyone studying the mass media - or communication or cultural studies, just as it is the implicit (subconscious) engine in design practice.” (Chandler 2014).

The application of semiotics to a subject involves relating it to a complex set of factors, the study of meaning-making, and the study of sign processes, which will define the work. In a semiotic sense, signs take the form of words, images, sounds, gestures and objects. A better understanding and awareness of the complexities of these factors is necessary for successful communication.

Moreover semiotics helps artists and designers recognize the meaning of communication, which does not only depend on the intention of the issuer of the message, but also on the interpretation of the recipients. Italian semiotician, philosopher and novelist, Umberto Eco (b. 1932) defines the text/message as a “lazy machine”.

He considers the meaning of a text only partly determined by the elements built in by the issuer of the message. Actually, the recipient of the message, who will have to de-code and interpret it, will also perform a fundamental role in the process.

In the research, the application of semiotics facilitates an analysis of the use of visual elements, in particular taking into account the reception process, which will dictate a different interpretation of various communicative design approaches.

Contrary to Swiss linguist and semiotician Ferdinand de Saussure (1857-1913), who defines and differentiates language and speech, Soviet/Russian linguist Valentin Voloshinov (1895-1936) affirms that the meaning of a sign is in direct relationship with its social context, “the sign is part of organized social intercourse and cannot exist, as such, outside it, reverting to a mere physical artefact.” (1973, p. 21). The meaning of a sign is not in its relationship to other signs within the language system, but rather in the social context of its use, Saussure was criticized for ignoring this historicity (*Ibid,* p. 61). To emphasize the anthropological dimension of the semiotic, Eco says that, “semiotics investigate all cultural process as communication processes. The intention is to show how cultural process systems are formed.” (1994, p. 38).

The codes thereby have particular importance because they contain characters that are coded by a sender and decoded by a recipient. This implies an information transfer model.

This thesis involves semiotics theoretical research, and practice based application, which allows for the examination of different aspects of visual communication systems for a posthuman condition.

1.4 Motivation and intent

Two simultaneous roles define me professionally in the fields of art and design, and both have been driving forces in my academic career. The first is my role as a practicing artist and designer, and the second is my role as an art and design researcher and educator. My vested interest in the fields of art and design as a creative practice has been the main motivating force behind the current engagement in my PhD research topic.

Over the past fifteen years, my interest in the fields of learning and creativity has enabled me to become involved in them in various capacities. My functions in these fields ranged from studio teaching to research, to the development of curricula; particularly the creation of trans-disciplinary project-content between art and design and computer sciences.

Eventually I was able to amass a substantial amount of insight into my fields of interest. Through my insight, as well as my observation of the drastic changes that the digital age has evoked; I was able to conclude that alternative approaches to art and design research and education are necessary. There is a need to develop approaches and methodologies that are tailored specifically to meet the requirements of those experienced in art/design education; as well as to meet the requirements of vast novel learner groups, that tend to fall outside of the profile of the traditional art/design student.

My research explores novel forms of communication that help in the formation of global societies that posses very diverse social capabilities and cultural backgrounds. In a language for a posthuman condition, a particular focus is placed on multimodal

forms of non-verbal, (in particular pictorial) communication between natural organisms (humans).
The research follows an interdisciplinary approach that uses visual communication, semiotic theories, cultural studies, and new media practices. The research methodology is practice-based. This approach is intended to demonstrate through creative outcomes, and lay the foundations for a universal means of communication. It can be understood as an open source scaffold for a pictorial language that fosters self-enhancing diversity of production models, communication paths, and interactive communities.

1.5 Contribution to new knowledge

The proposed research offers a potential contribution of new knowledge to the following areas:

1. The proposed research sees an underlying commonality of complexity in current theories in relation to context and levels of communication in design-oriented fields, particularly taking into account the reception process, which will dictate a different interpretation of various communicative design approaches.

2. The proposed approach engages theory and practice concurrently in the spirit of Transcultural Visual Communication System. The result is a proposition that will contribute to the practice of a pictorial means of communication.

Today, visual communication systems are supplemental to verbal languages rather than being regarded as substitutional. Visual communication systems facilitate the comprehension of particular concepts or words in specific contexts. In many fields like mathematics and music, visual symbolism has universal recognition and acceptance.

A standardized pictographic visual communication system can be created to facilitate universal-scale communication if a certain degree of human consensus takes place conceding the need for a universal language in a posthuman condition.

Individual human integration in various domains such as medical (Dyslexia), civil defence, emergencies and disasters in general can be facilitated through a more coherent approach provided by a visual-based language that can lead to a more

universal form of communication. Visual cultural integration can be attained through experimentation in visual means of communication.

A proposed universal pictographic communication system must be coherent and logical. A communication system is a reflection of individual cultures and a mirror of human experience. It must maintain integrity. Cultural similarities, not cultural differences are the key to penetrating and bridging world cultures. It then follows that the research should examine technological possibilities through a method of finding solutions like gestural (including emotional) languages.

To deliver more impactful information in the pictographic representations the aspect of time will be implemented, motion, rather than still can be used to enhance the presentation of the pictorial component. The proposed pictographic communication system may heavily impact intercultural communication in a posthuman condition.

1.6 Compressed summary of the theoretical narrative

This research is informed by linguistics, visual communication, semiotic theory, cultural studies, and new media art, none of which have offered a comprehensive, complete, and specific framework of bodily knowledge and processes required. Therefore a shared collective comprehension of pictorial means, along with the advancement of modern communication and information systems studies were developed in practice-based research.

This section provides a compressed summary of the theoretical narrative used to propose a theoretical model for the design of a transcultural visual communication system in a posthuman condition. This thesis examines the interdisciplinary approach that combines linguistics, visual communication, semiotic theory, cultural studies, and new media art.

The practice-based methodology allows experiential and conceptual characteristics of the context within which natural organisms (humans) could develop a universal means of communication that foster mutual understanding. This approach sets out the foundations for the design of a practice based theoretical model that constitutes an open source scaffold for a communication system, which could foster self-enhancing diversity of production models, communication paths, and interactive communities.

Chapter One is an introduction to the thesis and identification of the field, explaining methodology and goals. Summarising the contribution to new knowledge and research summary.

Through the analysis of pictographic writing systems, Chapter Two investigates the linguistic approach through the study of the pictographic, ideographic, logographic writing systems starting from Proto-writing and through the Mesopotamian writing systems, to the Egyptian hieroglyphs, Mesoamerican writing systems such as Maya script, Zapotec writings, Isthmian script/Epi-Olmec script, Mixtec and the Nahuatl. Also the Dongba symbols - Naxi script, the Nigerian Nsibidi, and the preaching Testerian catechism, as well as, analysing the ancient Chinese characters from 6500 BC. Also in the chapter, moving from the natural languages to the constructed fictional scripts, with a selection of fictional writing systems used in books, films and computer games. Such as Utopian alphabet, Aurek-Besh for *Star Wars*, Atlantean from the film *Atlantis: The Lost Empire*, Interlac DC Comics language of the United Planets, and Hymmnos from the video game series *Ar Tonelico*.

Chapter Three explores methods of constructed pictographic communication systems with the intention of its makers to become universal visual designers, artists and engineers, starting historically with the first Emoticons, analysing the Eastern styles (Japanese, Korean and Chinese) and Western styles until the development of current forms of visual communication such as iConji and the Emojis. Also, pictographic communication systems such as Blissymbolics and more informational approaches such as Isotype the International picture language, Nobel Universal Graphical Language, the iconic language Pictoperanto (inspired by Bliss system), LoCos Universal Visible language, and Earth Language are all explored.

Moreover, this thesis examines artistic and experimental projects such as Adrian Frutiger's 'Universal Mean Perception', and Xu Bing's project 'Book From the Ground', as well as Juli Gudehuse's pictographic interpretation of the *Book of Genesis*, 'The Elephant's Memory' and pictograms of the 'Noun Project'. The chapter also includes all visual/pictographic historical messages that were intend to communicate with future humans such as the WIPP Warning markers. Also as part of Chapter Three is the debate on universal human facial expressions and Chomsky's Universal Grammar Theories.

In Chapter Four, the science of semiotics and its use in visual communication is introduced through the categorization of linguistic signs in visual communication, and through a comparison between Saussure's, and Peirce's linguistic theories. The transfer of meaning and the reading of signs are discussed in the chapter, which moves on to Barthes's theory and legitimate/official language vs. unofficial language. In the chapter, the thesis examines the role of the reader in the 'Open Work Theory' of Umberto Eco and explains, in particular, the semiotics of pictographic communication and the cognitive approaches to pictographs.

In Chapter Five, the thesis examines transculturalism by defining what is culturalism and discusses the terms transculturalism versus multiculturalism, and cultural identities. The research moves to describe what are trans/multicultural cities (place) and explains the city as a palimpsest as an introduction to a dystopian posthuman condition.

Examples are given from films such as *Children of Men, Blade Runner, Elysium* and from literature of the Cyberpunk genre. The chapter examines the term trans/posthumanism and, in particular, the cultural posthuman and posthuman communication in Science Fiction Reality and the Singularity as a Physical Reality and singularitarian transhumanists.

Chapter Six covers the author's case study at the Venice Biennale with the project *The Seven Days, The Heavens and The Earth*. Concluding with developing a direction for a model for a transcultural visual communication system in a posthuman condition, and conceptualizing communicational pictographs with a critical reflection and a proposal for future work.

Chapter Two

Pictographic, Logographic, Ideographic Writing Systems And Languages

2.1 The origins of writing

2.2 Pictographic/ideographic/logographic writing systems

- 2.2.1 Mesopotamian writing systems; cuneiforms
  - 2.2.1.1 Sumerian, Akkadian cuneiforms (Assyrians and Babylonian) 3300 BC to100 AD
- 2.2.2 Egyptian hieroglyphs 3100 BC to 400 AD
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  - 2.2.3.1 Maya script 300 BC to 1697 AD
  - 2.2.3.2 Zapotec 500 BC to 1000 AD
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- 2.3.6 Hymmnos for the video game series *Ar Tonelico*

2.1 The origins of writing

Ice-age wall drawings and carvings date back to 27,000 to 40,000 years ago. Swiss typeface designer Adrian Frutiger (1928-2015) describes these drawings as, “An early attempt to visualise language and make a record of a linguistic discourse.” (2006, p.55). It is believed that the drawings were closely accompanied by a series of gestures, as an explanation or a ritual. The drawings remain as a record of these times, but the speech and the gestures have long been gone. The human body was often used as a reference point for these drawings through to Sumerian and Egyptian times. Men and women were distinguished through drawings of genitalia or by a full figure drawing, which rendered the meaning much less obvious. These drawings are pictographic signs and can be described as proto-writing.

As human civilization evolved, proto-writing ensystems of ideographic and/or early mnemonic symbols – gave way to writing systems. Systems of representation of language through graphic means eventually metamorphosed into true writing, which allowed a reader to reconstruct and derive meaning from the content of a linguistic utterance encoded into the writing. A means to document and store information in a tangible sense; writing is composed of graphemes that may in turn be composed of glyphs.

There is consensus among scholars on the distinction between prehistory and history of writing. They continue however to debate exactly when proto-writing became true writing; their definitions of each are largely subjective. The origin and spread of writing may be more complex to pinpoint than previously thought, as recent archaeological research indicates. Recent findings in the field suggest that complex state systems with proto-cuneiform writing on clay may have existed in the Middle East as early as the mid-fourth millennium BC.

The use of tallies and three-dimensional clay tokens were found in the Middle East as far back as 8000 BC. These tokens were gradually replaced with two-dimensional signs. Evidence suggests that the idea of writing spread gradually from one culture to another. The earliest record of Egyptian script and cuneiform inscriptions from Mesopotamia date back to 3100 BC, but the use of writing does not appear in Central America until 600 BC.

Pictographs and abstract signs were etched into moistened clay using a reed/stick. One of the earliest information-recording mediums; long-lasting clay was abundant and inexpensive. Pictographic representation was gradually replaced with wedge-shaped signs, made by pressing the tip of a wooden instrument such as a reed or wood stylus into the clay surface. This made deciphering the once abstract and/or enigmatic pictographs, possible.

The first stage of development was the shift from pictogram to ideogram, which is effectively a move from iconic representation to symbolism. Beyond purely pictographic writing, the next stage of development was the introduction to Rebus. There arose a need to communicate a greater level of detail, which was difficult to reach with a purely pictographic script. The Rebus meant that the pictographic icon could represent a sound associated with an icon.

There is evidence of little use of rebus in the nascent stages of cuneiform during the time between 3200 and 3000 BC. It was in the early Bronze Age (4th millennium BC) that true writing systems developed from Neolithic writing.

Phonetic writing signals the onset of a true writing system comprised of more intricate combinations of word-signs and phonograms. It is not until after 2600 BC, the middle of the third millennium, that more regular use of this type of phonetic writing became more apparent. By then the scribe was able to express abstract and literal ideas through signs for vowels and syllables. It was the Sumerian archaic (pre-cuneiform) writing and the Egyptian hieroglyphs that produced the earliest coherent texts (around 2600 BC), both of which emerged out of their ancestral pro-literate symbol systems (3400-3200 BC).

It was in two locales that scholars concede true writing of language was first conceived independently: around 3200 BC in Mesopotamia (ancient Sumer), and around 600 BC in Mesoamerica. Scholars are still in disaccord over whether the writing systems of 3200 BC Ancient Egypt and 1200 BC China where developed independently (Boltz 1994, 191).

A conventional developmental phase from proto-writing to true writing systems reflects a series of developmental stages:

[1] Pictorial (picture-based) writing system: Glyphs directly represent objects and concepts. In connection with this, the following sub-stages may be distinguished:

- Mnemonic: Glyphs
- Pictographic: Glyphs that represent an object or a concept
- Ideographic: Graphemes (abstract symbols) that represent an idea or concept

[2] Transitional system: A grapheme refers to the object or idea that it represents, and the name as well.

[3] Phonetic system: Graphemes refer to sounds or spoken symbols, and the form of the grapheme is not related to its meanings. This resolves itself into the following sub-stages:

- Verbal: A grapheme (logogram) that represents a whole word
- Syllabic: A grapheme that represents a syllable
- Alphabetic: A grapheme that represents an elementary sound

Historical overview, timeline and locations of the development of writing

Proto-writing

Ideographic and early mnemonic symbols were the means through which information was conveyed in the early Bronze Age. However, such systems most likely did not explicitly contain a natural language. Systems expressive of a natural language emerged as early as the 7th millennium BC, in the early Neolithic period. Examples are the Jiahu symbols in China, and the Vinča signs (6th to 5th millennia BC) from the Vinča culture of Central Europe and South-eastern Europe.

Bronze Age writing

Writing emerged in many different cultures in the Bronze Age. Examples are the cuneiform script of the Sumerians, the Egyptian hieroglyphs, the Cretan hieroglyphs, Chinese logographs, Indus script, Elamite script, the Olmec script of Mesoamerica, as well as the Early Semitic alphabets.

Iron Age writing

Writing in the Greco-Roman civilizations

The origins of the Aramaic and Greek alphabets can be found in the Phoenician alphabet (Proto-Canaanite alphabet). The Aramaic and Greek alphabets gave rise to

writing systems that emerged from Western Asia to Africa and Europe. Several European scripts such as the Runes, the Gothic and the Cyrillic alphabets owe their evolution to Greek and Latin. While Hebrew, Syriac, and the Arabic alphabet *abjads* were a continuation of the evolution of Aramaic.

Writing during the middle Ages

During the middle ages, literary languages were predominantly Greek and Persian. Other languages such as Syriac and Coptic, while still occupying a significantly important space, were not dominant literarily. In the 7th century, Arabic increased in influence due to the rise of Islam, and became a principal literary language in the region. So much so that the Persian and Turkish language adopted Arabic script as their primary script.

Renaissance and the Modern Era

Western Europe during this time experienced a brief revival of Greek, as well as a minor rejuvenation of Latin as significant literary languages. The development of new technologies over the centuries led to the constant evolution of the nature of writing.

Eventually, an informal, colloquial written style evolved that allowed for daily conversation to take place through writing not just speaking.

2.2 Pictographic/ideographic/logographic writing systems

Writing systems have been commonly classified into four categories: pictographic, logographic, syllabic, and alphabetic (segmental). Despite other methods of classification, this is the primary one. Any given writing system, however, can contain an amalgamation of some or all of the four categories in varying proportions. This may prove problematic when attempting to exclusively categorise a writing system. In such cases, a writing system is described as a "complex system".

A terminology utilised to describe types of script is essential to the scientific analysis of writing. Author Geoffrey Sampson (b.1944) provides the following classification in his book *Writing Systems* (1987) that specifically distinguishes between semasiographic and glottographic systems. In it, he stipulates that semasiographic systems are independent graphic languages bound to just a single spoken language,

while glottographic systems represent a particular spoken language through the use of visible marks.

Glottographic scripts can be broken down into logographic scripts and phonographic scripts. In logographic scripts, words or morphemes become meaningful units when their spoken counterpart is represented by individual graphic symbols. In phonographic scripts, marks are assigned to otherwise meaningless sounds. When these sounds are placed together in various combinations, words are built.

Pictographic/ideographic/logographic writing systems

Linguists John DeFrancis (1911-2009) and J. Marshall Unger (b. 1947) argue that both ideographic scripts and pictographic scripts are ineffectual in expressing all that can be communicated by language. Both linguists posit that a full writing system must be able to directly refer to a language to have the full expressive capacity of that language; that the full writing system cannot be entirely pictographic or ideographic. In ideographic scripts, concepts and/or ideas – rather than a specific word in a language – are represented by graphemes (ideograms). While in pictographic scripts, graphemes are iconic images. In logographic writing systems, glyphs represent words or morphemes (meaningful components of words, as in mean-ing-ful), rather than phonetic elements.

Logographic scripts contain graphemes that represent phonetic elements, which may be used exclusively or as phonetic complements to a logogram. In the latter case, the phonetic element is used to specify the sound of a logogram that might otherwise represent more than one word. Logographic scripts are not exclusively composed of logograms.

A logogram (or logograph) is a grapheme, which represents a word or a morpheme (the smallest meaningful unit of language). This stands in contrast to phonograms, which represent phonemes (speech sounds) or combinations of phonemes, and determinatives, which mark semantic categories.

It would prove impractical to assign every word or morpheme in a language a separate basic character (Halliday 1985, p. 19); therefore, all historical logographic systems include a phonetic dimension.

For example, in Akkadian, which employed cuneiform, most glyphs were used for their sound value rather than logographically. Many logographic systems also have a semantic/ideographic component, called 'determinatives' in the case of Egyptian and 'radicals' in the case of Chinese. Determinatives, which exist in many logographic systems, are semantic/ideographic components, as is the case in Egyptian hieroglyphs.

2.2.1 Mesopotamian writing systems; cuneiforms

The cuneiform script is one of the earliest known systems of writing (Woods 2015, p. 13); distinguished by its wedge-shaped marks on clay tablets, and made with a blunt reed for a stylus. The name 'cuneiform' itself simply means wedge-shaped, from the Latin *cuneus* (wedge), and *forma* (shape). The term 'cuneiform' came into English usage from the Old French *cunéiforme*.

The cuneiform writing system was in use for more than three millennia, and underwent several stages of development, from the 34th century BC, all the way to the 2nd century AD (Adkins 2003, p.47).

The cuneiform script properly developed from pictographic proto-writing in the late 4th millennium BC. Mesopotamia's proto-literate period spans roughly the 35th to 32nd centuries. The first documents unequivocally written in the Sumerian language date back to the 31st century, and were found at Jemdet Nasr (in today's Iraq). These documents included certain signs to indicate names of gods, countries, cities, vessels, birds, trees, etc. Known as determinatives, these served as a guide for the reader. Proper names continued to be written in purely logographic fashion, as was the regular practice.

Figure 1: Sumerian-proto-writing, Clay tablet inscribed with details of food rations, dating from c.3300-3100 BC from southern Mesopotamia.

The pictorial nature of the signs, such as the human head with bread in the lower register, is typical of ration texts. The sign is used in later Sumerian to mean, "eat". The round indentations record numbers.

Value of signs

Cuneiform functions can be broken down into four basic categories:

[1] Phonogram: Represents a speech-sound combination. Also referred to as syllabogram when representing an entire syllable.

[2] Logogram: Also referred to as ideogram; represents an entire word or concept. In the Akkadian language, logograms originate from Sumerian or quasi-Sumerian, and so are known as Sumerograms.

[3] Phonetic complement: to select the choice of logograms and indicate grammatical form. A logogram may be complemented with a phonogram, called phonetic complement. It is the last phonetic value of the word for which the logogram stands.

[4] Determinative: Usually a logogram or a series of phonograms that indicate the semantic content of a preceding or following word.

From about 2900 BC, many pictographs began to lose their original function, making any given sign have various meanings depending on the context. The sign inventory was reduced from about 1,500 signs to about 600 signs, and writing became increasingly phonological.

Two major developments occurred in the mid-3rd millennium BC that facilitated writing. The first was the change in the direction of writing from left-to-right in a horizontal direction. This resulted in a 90° counter-clockwise rotation of all pictographs. The second development was the introduction of a new wedge-tipped stylus, which was pushed into the clay to produce wedge-shaped (cuneiform) signs.

A gradual shift occurred in signs after the Semites conquered Southern Mesopotamia, where some pictograms became syllabograms. This was probably done to make things clearer in writing. The Semites began altering the signs by adding to them or by combining two signs; they did so by using either geometrical patterns or other cuneiform signs..

Eventually with the progression of time, cuneiform grew more and more complex, and differentiating a pictogram from a syllabogram became increasingly amorphous. Many of the symbols had too many meanings, and were therefore vague and unclear. As a result, symbols were combined to signify both the sound and the meaning of a compound.

Figure 2: The seven stages of the development of the sign SAG " Head"

Stages:
[1] The pictogram as it was drawn around 3000 BC.
[2] The rotated pictogram as it was written around 2800 BC.
[3] The abstracted glyph in archaic monumental inscriptions, from around 2600 BC.
[4] The sign as written in clay, contemporary to stage 3
[5] Represents the late 3rd millennium
[6] Represents Old Assyrian ductus of the early 2nd millennium, as adopted into Hittite
[7] The simplified sign as written by Assyrian scribes in the early 1st millennium, and until the script's extinction.

All Mesopotamian civilizations used cuneiform; Sumerians, Akkadians, Babylonians, Elamites, Hatti, Hittites, Assyrians, Hurrians among others, until 100 BC when it was abandoned in favour of the alphabetic script.

Proto-literate period; archaic cuneiform

The evolution of writing occurred in stages. In its earliest form, commercial transactions were represented by tokens. A sale of four sheep was represented by four tokens designed to signify sheep. At first, such tokens were made of stone. Later, they were created from clay. Tokens were stored as a record of transactions.

In the next stage of development, pictographs were drawn into wet clay, and these images replaced the tokens. Scribes no longer drew four sheep pictographs to represent four sheep. Instead, the numeral for four was written beside one sheep pictograph. Through this process writing was becoming disentangled from direct

depiction. More complicated number systems began to develop. The pictographic symbols were refined into the writing system known as cuneiform.

Invented by the Sumerians, and emerging in Mesopotamia around 3500 BC, this writing system only conveyed simple nouns. As it evolved, it grew more and more abstract and encompassed more abstract concepts. This writing system, cuneiform, eventually came to be the world's earliest writing. Serving both phonetic and semantic functions, cuneiform was not just a direct representation of objects in picture form. It represented sound, as well as meaning (object or concept).

2.2.1.1 Sumerian, Akkadian cuneiforms (Assyrians and Babylonian) 3300 BC to 100 AD

In the late 4th millennium BC, the Uruk IV period, Sumerian script emerged in Sumer. Cuneiform writing then began as a system of pictographs. The system consisted of a combination of logophonetic, consonantal alphabetic and syllabic signs. By the 3rd millennium, the number of characters being used grew smaller, thereby simplifying the pictorial representations and at the same time making them more abstract. The number of characters decreased in quantity from about 1,000 in the Early Bronze Age to about 400 in the Late Bronze Age.

The original Sumerian script was adapted for the writing of the Akkadian, Eblaite, Elamite, Hittite, Luwian, Hattic, Hurrian, and Urartian languages. Cuneiform writing was gradually replaced by the Phoenician alphabet during the Neo-Assyrian Empire. By the 2nd century AD, the script had become extinct, and all knowledge of how to read it was lost until it began to be deciphered in the 19th century.

The archaic cuneiform script was adopted by the Akkadians around 2500 BC. By 2000 BC, it had evolved into Old Assyrian cuneiform, with many modifications to Sumerian orthography.

The Semitic equivalent of many signs became distorted or abbreviated to form new phonetic values, because the syllabic nature of the script as refined by the Sumerians was unintuitive to Semitic speakers. At this stage, the former pictograms were reduced to a high level of abstraction, and were composed of only five basic wedge shapes:

horizontal, vertical, two diagonals and the *Winkelhaken* impressed vertically by the tip of the stylus.

The Akkadian phonetic symbols were taken from the Sumerian syllabary, along with logograms (read as whole words). Several signs in the script had both a syllabic and logographic meaning, which rendered them polyvalent.

Akkadian gradually replaced Sumerian as a spoken language around 2000 BC; scholars are still in debate over exact dating. Sumerian continued to be used as a sacred, ceremonial, literary and scientific language in Mesopotamia until the 1st century AD.

While Sumerian did enjoy a quick revival, it eventually grew extinct and was only used in literary contexts, whereas Akkadian would continue to be spoken for the next two millennia. It evolved into later forms known as Babylonian and Assyrian. This "mixed" method of writing continued through to the end of the Babylonian and Assyrian empires. The Babylonian syllabary remained a mixture of logographic and phonemic writing.

The Assyrian language evolved with the onset of the Iron Age (10th to 6th centuries BC) in which the Assyrian cuneiform was simplified further. Later, from the 6th century, Aramaic gained more precedence and side-lined the Assyrian language as it was written in the Aramaean alphabet. However, Neo-Assyrian cuneiform, which was a simplified version of Assyrian (Iron Age 10th to 6th centuries BC), was still being used in literary tradition well into Parthian times (250 BC to 226 AD).

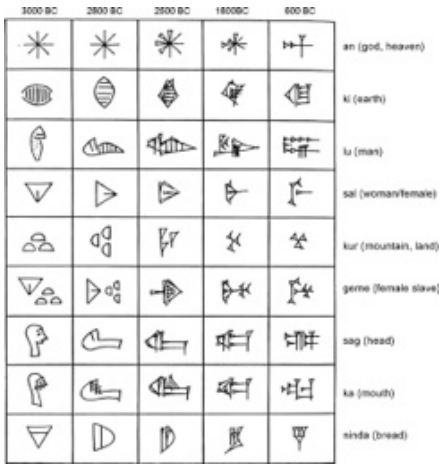


Figure 3: The development of the cuneiforms script from 3000 BC to 600 BC

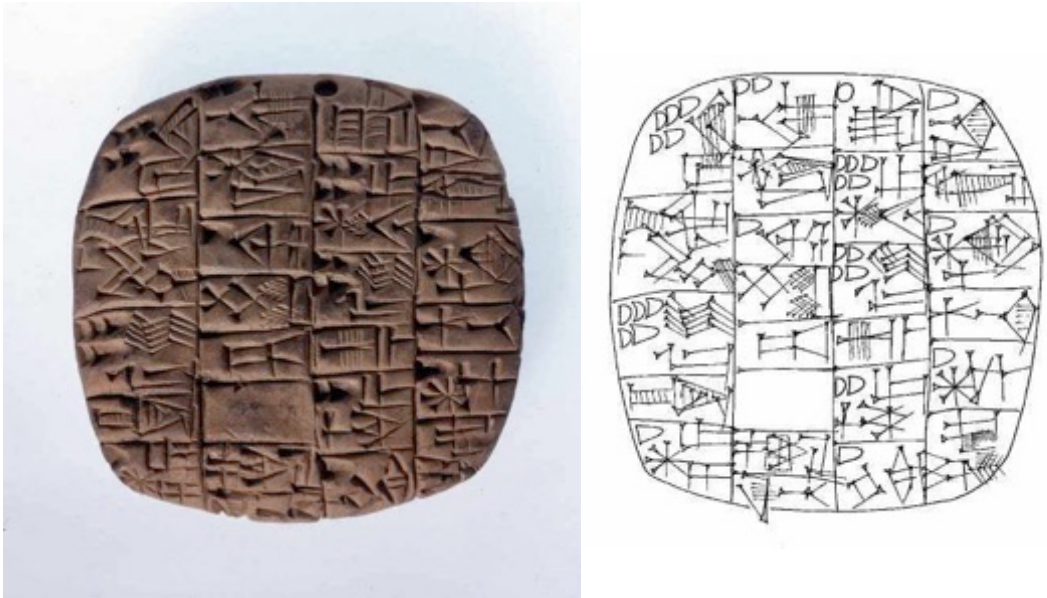


Figure 4: Clay tablet; Pre-Sargonic. Sumerian account of silver and other commodities; square tablet.

2.2.2 Egyptian hieroglyphs 3100 BC to 400 AD

The word hieroglyph originates from the Greek adjective ἱερογλυφικός (*hieroglyphikos*). It is a composite of ἱερός (*hierós* meaning sacred), and γλύφω (*glýphō*, glyph, meaning carve or engrave). The name is in turn to a calque translation of the ancient Egyptian language (medu-netjer) 'god's words'.

Figure 5: Hieroglyphs from the tomb of Seti I, Valley of the Kings, Luxor.

Ancient Egyptians used hieroglyphs, the formal writing system, in religious literature on papyrus and wood. Hieratic and demotic were two other variations of the script. During the time from 2000 to 1650 BC, around 700 hieroglyphs were used in Classical or Middle Egyptian writing. About 800 hieroglyphs existed during the periods of the Old Kingdom, the Middle Kingdom, and the New Kingdom. This number rose to over 5000 hieroglyphs by the Greco-Roman period (332 BC to 400 AD).

Visually, hieroglyphs are mostly figurative. They represent real and/or conceptual elements, stylized and simplified, but all perfectly recognizable in form. However, according to the context, the same sign can be interpreted in one of two ways:
[1] As a phonogram (phonetic reading).
[2] As a logogram, or as an ideogram (semagram; determinative, semantic reading).

Hieroglyphs are composed of 3 different kinds of glyphs:
[1] Phonetic glyphs: These include single-consonant characters that function like an alphabet.
[2] Logographs: These represent morphemes.
[3] Determinatives: These help specify the meaning of logographic or phonetic words.

Figure 6: The evolution of Ancient Egyptian writing: hieratic and demotic. Illustration from the Encyclopaedia Biblica, circa 1903.

Phonetic reading

Most non-determinative hieroglyphic signs are read independent of the visual characteristics. Meaning that they are phonetic in nature. A more contemporary example would be the picture of an eye, which in the English language may represent the word 'eye' and the pronoun 'I'. In the latter case, the picture would be referred to as a phonogram of the word 'I'. Single-consonant phonograms are known as unilateral signs, two-consonant phonograms are bilateral signs, and three-consonant phonograms are trilateral signs.

The ancient Egyptians did not simplify their complex writing system into an alphabet; instead, they had only 24 uniliterals in their hieroglyphic script, although formulating all the signs in the manner of uniliterals could have been possible.

Phonetic complements

Hieroglyphic script was held as a scared art form, and not just viewed as a communication tool. Scribes paid meticulous attention to the aesthetic value of their script, never leaving large areas of blank space in their writing. Scribes might even add supplementary phonetic complements or invert the order of signs to obtain the most aesthetically pleasing look.

Semantic reading

Characters could be read for their meanings as well as have a phonetic interpretation. In the case of phonetic interpretation, what is being spoken are logograms (ideograms), or semagrams (determinatives). Hieroglyphic script was written in four different ways: horizontally, left-to-right, or right-to-left; as well as vertically, facing left-to-right, or facing right-to-left (Gardiner 2005, p. 25).

Animal or human hieroglyphs, those that have a clear front and back, generally faced the beginning of a sentence and were facing the same direction that any large human or divine figure faced in the tableau.

For example, if a tableau contained a picture of a man seated and facing right, then all hieroglyphs with a definite front and back written in text above or behind the man, faced right as well. Retrograde hieroglyphics are those that do not follow this pattern.

If a text is read ‘normally’ without making sense, then it is safe to conclude that the text is retrograde.

The well-ordered and tidy patterns of hieroglyphic text served the ancient Egyptians all hieroglyphs with a definite front and back written incontained two or more short or thin symbols. Variations did exist however; sometimes symbols that were too tall or too wide would be shrunk in size and placed alongside a short or thin hieroglyph. With the New Kingdom some modifications took place, like lengthening of the compositional blocks, which gave them a column-like look. These columns would become even shorter when written in horizontal text.

The Egyptian language decoded

Decoding Ancient Egyptian hieroglyphic script was made possible with the discovery of the Rosetta Stone in 1799. The same passage was transcribed in hieroglyphic, demotic, and Ancient Geek. Scholars now were able to decipher signs and symbols of hieroglyphic script.

For a long time, deciphering of hieroglyphics was hampered because emotional meanings were largely assigned to the symbols, which were not their true intended meanings.

Hieroglyphs were almost fully deciphered in 1822 after Thomas Young and Jean-Francois Champollion took on years of research (made possible by the discovery of the Rosetta Stone). Attempts to decipher Egyptian hieroglyphs however date back to the Byzantine and Islamic periods in Egypt.

Today, hieroglyphs remain in two forms. The first is in demotic form through half a dozen glyphs added to the Greek alphabet when writing in Coptic script. The second is in a more indirect form, as the inspiration for the original alphabet that was ancestral to nearly every other alphabet ever used, including the Roman alphabet.

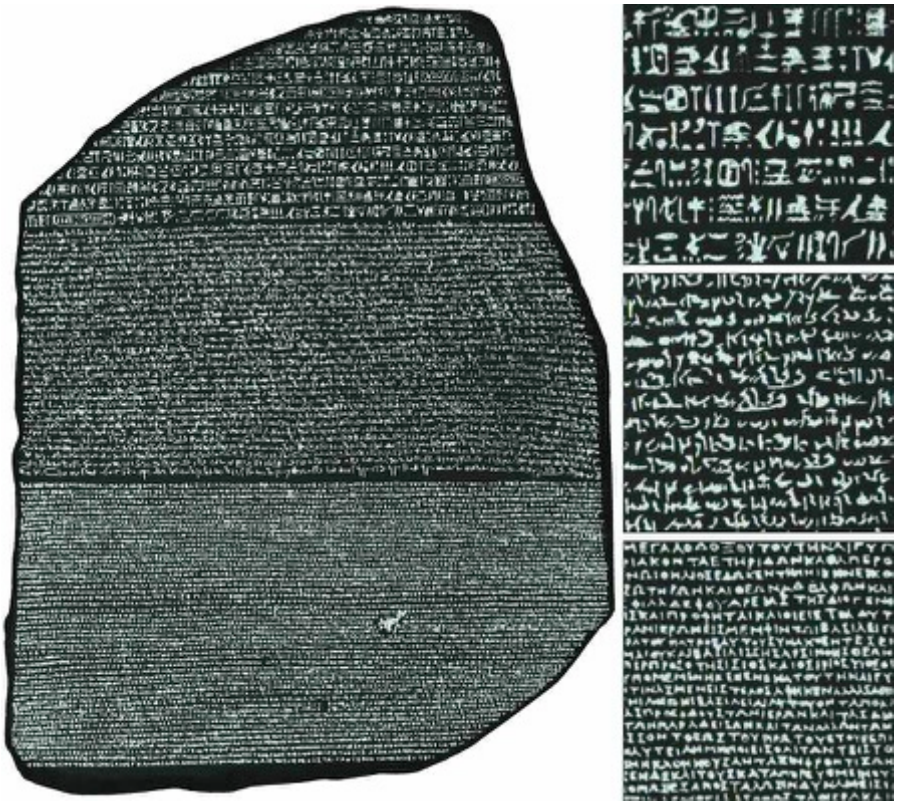


Figure 7: Close up of the Rosetta stone three scripts; hieroglyphic, demotic, and Ancient Greek

2.2.3 Mesoamerican writing systems 900 BC to 1697 AD

Mesoamerica is among the few known places in the world where writing has developed independently. Mesoamerican scripts deciphered to date are a combination of logographic and syllabic values. They are often called hieroglyphs due to the iconic shapes of many of the glyphs. Five or six scripts have been documented in Mesoamerica, but the limits of archaeological dating methods make it difficult to establish which was earliest, and hence the forebear from which the others developed.

Figure 8: Mesoamerican writings.

2.2.3.1 Maya script 300 BC to 1697 AD

The writing system of the Maya civilisation of Mesoamerica is known as Maya script, Maya glyphs, or Maya hieroglyphs. Mayan inscriptions dating back to the 3rd century BC were the earliest distinctly Mayan script found in Bartolo, Guatemala. It is the only Mesoamerican writing system that has been substantially deciphered.

Maya writing was in continuous use throughout Mesoamerica until shortly after the arrival of the conquistadors in the 16th century AD, and remained in use in some isolated areas like Tayasal well into the 18th century.

Several hundred different glyphs existed in Maya writing, making it seem like a purely logographic language. However, that was not the case, and the language became increasingly phonetic over time after many attempts at deciphering the Maya glyphs led to the discovery that the writing system was actually logosyllabic. Since then, it has been established that there are about 30 phonetic sounds in the Maya language, rendering a purely phonetic alphabet possible in theory with the writing of 30 signs.

Figure 9: Maya Script.

Maya writing is a mixed system that is composed of glyphs rather than a pure alphabet. Many of the glyphs are polyvalent and have two or more meanings (Sharer 1994, p. 621). Glyphs have been identified that correspond to verbs, nouns, adjectives, and particles (*Ibid,* 628).

Glyphs and glyph groups make up Maya writing, with the main signs larger and more central in a group. The main sign is joined by an affix in one of four forms depending on its position: in the form of a prefix (left), a postfix (right), a superfix (above), and a subfix (below). When fused with a main sign, the affix is refereed to as infix (*Ibid*). Main signs can also be a composite of two or more signs. The usual order of reading the glyphs is: prefix – superfix – main sign – subfix – postfix, although there are very few exceptions.

There are about 800 glyphs that are known at this time, and each has a catalogue number starting with 'T' as per J. Eric Thompson's cataloguing system (1962) University of Oklahoma Press. Many of the glyphs even have nicknames.

Text is usually read left-to-right if there are only two columns of glyphs. In cases where there are even numbers of columns, the first two columns are read left-to-right and the next two columns are read right-to-left, and so on. For odd numbers of columns, the order is reading down the first column then reading the next two columns left-to-right. Or, reading the first two columns left-to-right, then reading down the rightmost column. Yucatec codices (Dresden and Madrid codices) are often placed in the order of verb-object-subject, as is the case in the language.

The origin of Maya writing is still quite debatable; it is likely that it may have first emerged in one or all of Guatemala, Oaxaca, and the Isthmus of Tehuantepec. However, it is established that some of the glyphs originated in Cholan.

Glyphs of historical and social events have been identified including emblem glyphs, glyphs for birth, accession, death, titles, capture, captor, captive, marriage, numerical position in the dynastic line, dates, personal names, genealogy, lines of succession, as well as astronomical and astrological events.

Over time, the subject matter of Mayan texts began to be largely focused on divination, astronomy, horoscopes, almanacs, a katun sequence, patron deities, ceremonies, and some history. The Mayan texts of later periods, those found on murals, stelae, and carved stone lintels became increasingly focused on wars and the conquest and sacrifice of neighbouring leaders, and eventually the conquest of territory.

Figure 10: Page 9 of the Dresden Codex showing the classic Maya language written in Mayan Script.

2.2.3.2 Zapotec 500 BC to 1000 AD

The Oto-Manguean linguistic stock is comprised of the Chatino group and the Zapotec group. The Zapotec group, is made up of 58 languages, and is named after the Zapotecs, the third largest indigenous ethnic group in Mexico, after the Nahua and the Mayans.

Figure 11: Examples from diachronic reconstruction of the glyphic version for the 20-day name list in the Zapotec calendar.

Zapotec may have appeared as early as 600 BC in the Valley of Oaxaca, where over 500 stone inscriptions have been found. The writing system is older than the Maya, Mixtec or Aztec systems. Described as one of the hieroglyphic writings, Zapotec was written in vertical columns, often with numerals (Marcus 1980, p. 113). The later Zapotec writing system was not fully understood, but it is believed that it was partly phonetic and partly ideographic.

The Zapotec calendar and other information such as, political organization, religion, grammar, vocabulary, genealogies and some regional maps; were recorded by the Spanish and some Zapotec tribes in the 16th century. Noble names reflecting the ritual calendar appear on monuments of stone and place signs for landmarks and genealogies appear in the pictorial document *Lienzo de Guevea* (16th entury), used by J.Marcus to interpret earlier stone monuments (*Ibid*, 3).

The evolution of Zapotec glyphs can be traced in Zapotec writing. Early glyphs were simple pictorials that depicted captives of conquests and listed the conquered places. Glyphs then became concerned with peaceful diplomacy. Eventually, the Zapotec system became a highly complex and increasingly informational pictorial system that emphasized royal statuses, genealogy, and landmarks (*Ibid*, 11).

2.2.3.3 Isthmian script/Epi-Olmec script 100 BC to 500 AD

During the Era of the Isthmus of Tehuantepec (100 BC to 500 AD), the Isthmian script, an early Mesoamerican writing system, was in use. The stela was found in La Mojarra, and so the script also became know as La Mojarra Script. Other names given by scholars were Epi-Olmec, the most common name in scientific literature; Tuxtla Script, named after the Tuxtla statuette as well as the Tuxtla mountains close to which many of the texts have been found.

The Epi-Olmec culture existed during the Late Formative period (around 300 BC to around 250 AD). A successor to the Olmec – hence the prefix *epi* (post) – the Epi-Olmec culture was concentrated in the Papaloapan River basin, in the central region of the present-day Mexican state of Veracruz.

Isthmian script is made up of a single set of signs called logophonetics. Similar to the Maya script, Isthmian logophonetic script has phonograms (signs with phonetic values), and logograms (glyphs that represent morpheme).

In 1986, an inscribed slab was found in the Acula River near the village of La Mojarra. It was one of the most important Olmec finds and was dubbed 'Stela 1 of La Mojarra'. The stone slab was inscribed with 465 glyphs arranged in 21 columns, as well as the image of a ruler. Like the Maya script, the script on the slab used the Long Count, however, the writing itself was unlike any other writing system in Mesoamerica, including Maya, Zapotec, Mixtec, or Aztec.

The Epi-Olmec culture had highly sophisticated calendric and writing systems born of a level of cultural complexity unknown to the Olmecs. It didn't however attain the far-reaching achievements of the Olmec culture.

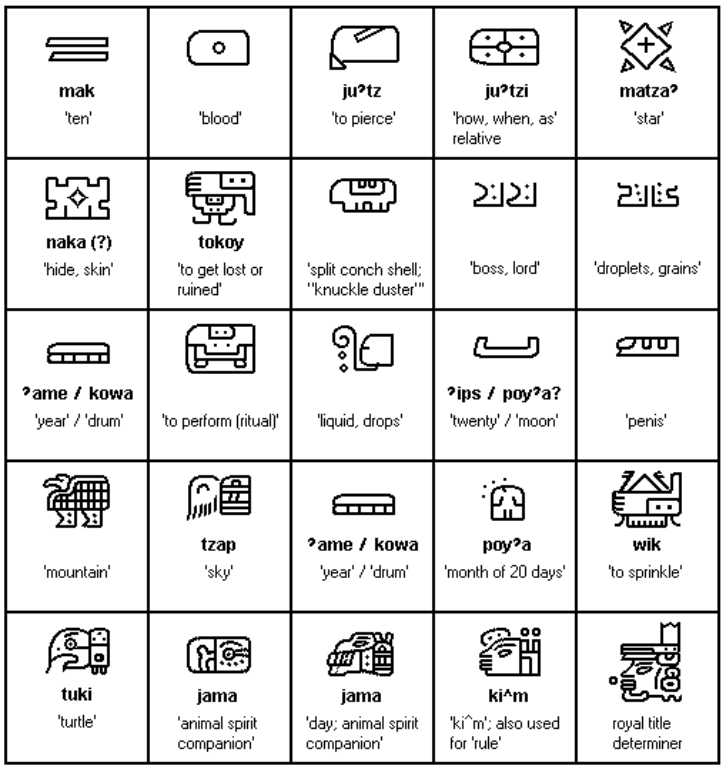


Figure 12: Examples from The Epi-Olmec Script.

2.2.3.4 Mixtec 1200 BC to 1600 AD

It was during the Post Classic period of Mesoamerica that Mixtec writing emerged. Scholars found records of genealogy, historic events, and myths in the Mixtec codices of pre-Columbia. The form, style, and function of the Mixtec writings changed with the arrival of the Europeans in 1520 AD.

Mixtec used three types of characters: pictographic symbols, ideographic symbols, and phonetic signs. Pictogrpahic symbols can refer to one or more word, and can resemble the item they are representing. Ideographic symbols are found in other languages of the region, often representing the same idea, and so do not require knowledge of the Mixtec language for comprehension.

The Mixtec language is tonal, meaning that it relies on differences and inflections in the tone of a word to reflect the meaning of that word. Therefore, the phonetic symbols are essential to the meaning of the words they represent. Phonetic symbols indicate the tone of the spoken word or represent a homonym of the intended word instead.

The Mixtec writing system is a logographic system that uses signs principally to record names of persons and places. The remainder of the story is conveyed through symbols and pictorial conventions that appear to have the only occasional relationship to language. In addition, as far as can be determined at the present time, the signs utilized to express names are based on whole words in the Mixtec language rather than on syllables or single sounds (phonemes) (Smith 1983, p. 238).

Mixtec signs represent one or more words, most often names of persons or places. The symbols, which are ideograms or ideographs that are motifs, may be found in other regions of Mesoamerica, and are thus not language-dependent. For example, the human or animal with a speech-scroll emerging out of their mouths represents speech or a sound. Mixtec pictorials, like many languages found in other Mesoamerican areas, include conventions such as, "A mummy bundle to indicate a dead person, the confrontation of a male and a female figure to indicate marriage, and the grasping of the hair of one person by another to indicate conquest or prisoner-taking." (*Ibid,* 239).

Figure 13: Examples from Mixtec writing.

2.2.3.5 Aztec, Nahuatl writing 1400 BC to 1600 AD

The Nahua people of central Mexico used Aztec (or Nahuatl) writing. It is a pre-Columbian writing system based on pictographs and ideographs, and has a significant number of logograms and syllabic signs. Like the Mixtec writing system, Aztec writing is logographic, and may have been derived from Mixtec. This made it easier for those who spoke multiple languages to read the glyphs.

The Aztecs documented conquests, heart sacrifices, dynastic history, genealogy, and conquered polities. The Codex Mendoza – an Aztec codex created fourteen years after the 1521 Spanish conquest of Mexico – shows tribute in the form of clothing and footprints representing passage of time.

Aztec natives kept record of things such as years and times; days and feasts; dreams, illusions, superstitions, omens, baptisms, naming of infants, rites, ceremonies, victories, war conduct, succession of principal lords, bad weather conditions, noteworthy signs in the sky, pestilences, and the time and ruling lord under which this all occurred. This is according to the Franciscan Friar Motolinia who wrote *Historia de los Indios de Nueva Espana* in 1541 detailing these facts (Boone 1994, p. 50).These were the continuous year-count annals that recorded history.

Boone argues that, "Standardization and convention allowed most of the pictorial histories to be intelligible across ethnic and linguistic boundaries throughout and beyond the imperium" (*Ibid,* 51).

Figure 14: Examples from Aztec, Nahuatl writing.

2.2.4 Dongba symbols - Naxi

The Naxi people in Southern China used pictographic glyphs called the Dongba, Tomba (dto-mba) or Tompa symbols. The Dongba (shamans/priests) used these glyphs exclusively as an aid to the recitation of ritual texts during religious ceremonies and shamanistic rituals. Dongba is the only pictographic language in the world still being actively used and maintained in certain areas in China.

According to Dongba religious fables, Dongba script was created by the founder of the Bön religious tradition of Tibet, Tönpa Shenrab (Tibetan: *ston pa gshen rab*) or Shenrab Miwo (Tibetan: *gshen rab mi bo*) (He 2008, p. 144). Although created in the same environment as other ancient scripts, the Dongba script is an independent writing system. Dongba, which is largely a mnemonic system, was in use as early as the 7th century, during the early Tang Dynasty according to Chinese historical documents. By the 10th century during the Song Dynasty, Dongba was widely used by the Naxi people.

For abstract words that do not have glyphs, Dongba glyphs are used as rebuses. Dongba is comprised of about 1400 symbols; pictograms make up about 90% of these symbols. Some of these pictograms are also used for their phonetic values by the rebus principle. Different authors can use the same Dongba glyphs with various meanings, and it may be supplemented by the Geba syllabary for clarification. Therefore, Dongba does not represent the Naxi language by itself. The Dongba script was originally used as a prompt for the recitation of ritual texts, the Geba script was used for inventories, contracts, and letters.

Figure 15: Detail from a Naxi manuscript, displaying both pictographic Dongba and smaller syllabic Geba.

2.2.5 Nsibidi 400 and 1400 AD

Nsibidi is an ideographic script indigenous to (what is now) Southeastern Nigeria. There have been suggestions however that Nsibidi includes logographic elements. Nsibidi is also known as Nsibiri, Nchibiddi or Nchibiddy.

The Ejagham people of the northern Cross River region are most commonly credited with originating Nsibidi. Colonialists in the region discovered the largest and most diverse Nsibidi script among the Ejagham. Nsibidi spread throughout the region and over time mixed with other cultures and art forms such as the *Igbo uri* or *uli* graphic design.

Nsibidi, described as a t the region and over time mixed with other cultures and art forms such as the ultures and art fd art froughout the region and over time mixed with other cultures and art fd art fse the same Dongba glyphs with various meanings, and i andNsibidi crossed ethnic lines and was a uniting factor among ethnic groups in the Cross River region. Nsibidi was used in court cases, known as *ikpe*. Nsibidi symbols and motifs are used in the design of the *ukara ekpe* woven material; they were dyed blue, green, or red by post-menopausal women in secret and young males in public. Symbols including lovers, metal rods, trees, feathers, hands in friendship war and work; masks, moons, and stars are dyed onto ukara cloths. Ukara ekpe cloths were woven in Abakaliki, Arochukwa and Ohafia, and were worn by members of the Ekpe society.

Figure 16: Recent Nsibidi symbols

2.2.6 Testerian catechism 1600 AD

The Testerian catechism is a 17th century manuscript that was used in the early period of the Spanish conquest of Mexico, before religious instructors had learned the languages of the indigenous peoples. It is one of the most notable documents in the archives of the Center for the Study of the History of Mexico. Testerian is a pictorial catechism, often called the Testerian manuscripts, after the Franciscan friar Jacobo Testera, who arrived in Mexico in 1529. Testera used paintings to help instruct the indigenous people in the Christian religion, it was in use until the 19th century.

Testerian did not develop out of indigenous pictorial tradition; rather, it represented European notions of what indigenous documentary needs were. The idea behind the pictorial catechisms was that the indigenous people, who were accustomed to reading in pictures, could thereby read the Christian prayers.

The Testerian were artificial genres of manuscript painting, created to suit Spanish needs and to meet European ideas of indigenous needs. Certainly, they were not central to Nahua thought or action, although they do exemplify the perceived centrality of the manuscript painting tradition to indigenous life, and they help us understand why so many other post-conquest pictorial forms did continue to be important.

Figure 17: Testerian catechism.

2.2.7 Chinese characters

Chinese characters are logograms used in the writing of Chinese and some other Asian languages. In Standard Chinese, they are called *hanzi* (simplified Chinese: 汉字; traditional Chinese: 漢字) (Potowski 2010, p. 82). They have been adapted to write a number of other languages including Japanese, where they are known as *kanji*, Korean, where they are known as *hanja*, and Vietnamese in a system known as *chữ Nôm*.

Chinese characters number in the tens of thousands, though most of them are minor graphic variants encountered only in historical texts. There are various national standard lists of characters, forms, and pronunciations. Simplified forms of certain characters are used in China, Singapore, and Malaysia; the corresponding traditional characters are used in Taiwan, Hong Kong, Macau, and, to a limited degree, South Korea.

In Japan, common characters are written in Japan-specific simplified forms (*shinjitai*), which are closer to traditional forms than Chinese simplifications. Uncommon characters are written in Japanese traditional forms (*kyūjitai*), which are virtually identical to Chinese traditional forms. In South Korea, when Chinese characters are used they are of the traditional variant and are almost identical to those used in places like Taiwan and Hong Kong.

Chinese characters follow several methods in representing words. Some of the most commonly used characters were either originally pictograms depicting the denoted objects, or were simple ideograms expressing meaning iconically. Chinese characters can be written in numerous styles and scripts that are derived from various calligraphic and historical models. Most of the characters emerged in China and are now common, with the exception of minor variations in countries where Chinese characters are used.

Compound ideograms were used to express other words, however the vast majority of words were written using the rebus principle. In the latter case, a character for a similarly sounding word was either simply borrowed or extended with a disambiguating semantic marker to form a phono-semantic compound character.

Only a small portion of Chinese characters are pictograms, derived from pictures of the objects they denote. These pictograms have been standardized, and simplified over time. They have also been stylized to make them easier to write. As a result, their derivation is not always conspicuous.

The small category of simple ideograms contains characters that are direct iconic illustrations. Compound ideograms have been interpreted as a combination of two or more pictographic or ideographic characters to suggest a third meaning. Ideographic compounds are common among characters coined in Japan, as well as a few characters coined in China in modern times.

Rebus was central in the history of Chinese writing. It represented the point at which logographic writing became purely phonetic (phonographic). When an existing character is used to represent an unrelated word with similar or identical pronunciation, it falls under the category of rebus.

There are two parts to a phono-semantic compound. On one hand, there is the semantic indicator, which is often graphically simplified. This implies the general meaning of the compound character. On the other hand, the second part is another character that is a phonetic indicator. The pronunciation of this character suggests the pronunciation of the compound character.

The oldest script still in use today is the Seal script (篆書(书), *zhuànshū*), which evolved organically out of the Zhou's script Spring and Autumn period. The first Emperor of China, Qin Shi Huang, adopted the Seal script. Very few people are able to read Seal script with ease today. As the name implies, the Seal script is now only used in artistic seals as the art of carving a traditional seal in the script is still in practice today. Many calligraphers still work in this style.

The Clerical script" (隸書(隶书), *lìshū*) of the Qin Dynasty is still in regular use. The Weibei (魏碑, *wèibēi*) from the Han Dynasty, as well as the Regular script (楷書(书), *kǎishū*), which is used mostly for printing, and the Semi-cursive script (行書(书), *xíngshū*), used mostly for handwriting. The cursive script (草書(书), *cǎoshū*) is used informally. *Cǎoshū* literally means 'grass script'. The basic character shapes are not

explicitly expressed, but rather suggested, with sometimes extreme abbreviations. This script is highly admired for the beauty and freedom it embodies. It is so cursive to the extent that individual strokes are no longer differentiable, and the characters are often illegible to the untrained eye. Both Japan and the People's Republic of China have adopted simplified characters derived from cursive script. The Japanese hiragana script is also derived from this script.

Some scripts like the Japanese Edomoji script, created outside China, have remained restricted to their countries of origin and have not spread to other countries like Chinese scripts have.

Figure 18: The evolution of Chinese Characters.

2.3 Fictional Scripts: Selected fictional writing systems used in books, films and computer games

Fictional, or artificial scripts are designed to be used with a constructed language. They are a new writing system that has been specifically created by an individual or group, and has not evolved like a natural script, as part of a language or culture, is called a fictional script or an artificial script. Examples of fictional scripts are neography and conscript. Several fictional scripts are used in linguistic

experimentation or for practical objectives within an existing language. Fictional scripts can be created within a fictional context such as in books or movies. In fictional worlds created for books or movies, fictional languages give more credibility and dimension to fictional worlds, thereby making them more plausible. This enables the characters to communicate in a fashion, which is both alien and dislocated.

Some of the best visual constructed scripts dedicated to fictional languages are; the Utopian alphabet by St. Thomas More for his book *Utopia*, the Ancients alphabet by Ivana Vasak for the *Stargate SG-1* television series, the Aurek-Besh by graphic artist Stephen Crane for *Star Wars*, the Atlantean for the film *Atlantis*, the Interlac, for DC Comics's language of the United Planets, and the Hymmnos for the video game series *Ar Tonelico*.

2.3.1 Utopian alphabet for the book *Utopia*

St. Thomas More (1478-1535) was a lawyer, writer, scholar, statesman, diplomat, political theorist and patron of the arts who invented the Utopian alphabet during the 16th century. More invented a series of symbols to replace (or encrypt) the letters of the Roman alphabet. Utopian has its 22-letter alphabet, with letters based on the shapes of the circle, square, and triangle.

Utopia alphabet appears in his book *Utopia*, which was written in Latin and published in 1516. The book, narrated by a traveller called Raphael Hythloday, praises all aspects of the life of the fictional country of Utopia. Hythloday's comments can be seen as an indirect critique of contemporary English society.

Although he did not create a unique language for the Utopians, he imagined that they would write in an exclusive, coded script. Like the island setting, this measure would provide the Utopians with greater self-containment and set them apart from the outside world.

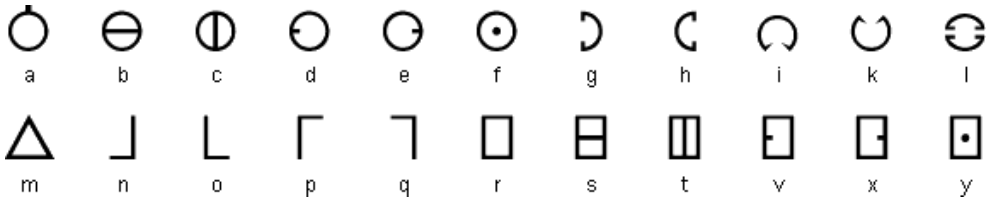


Figure 19: The Utopian alphabet.

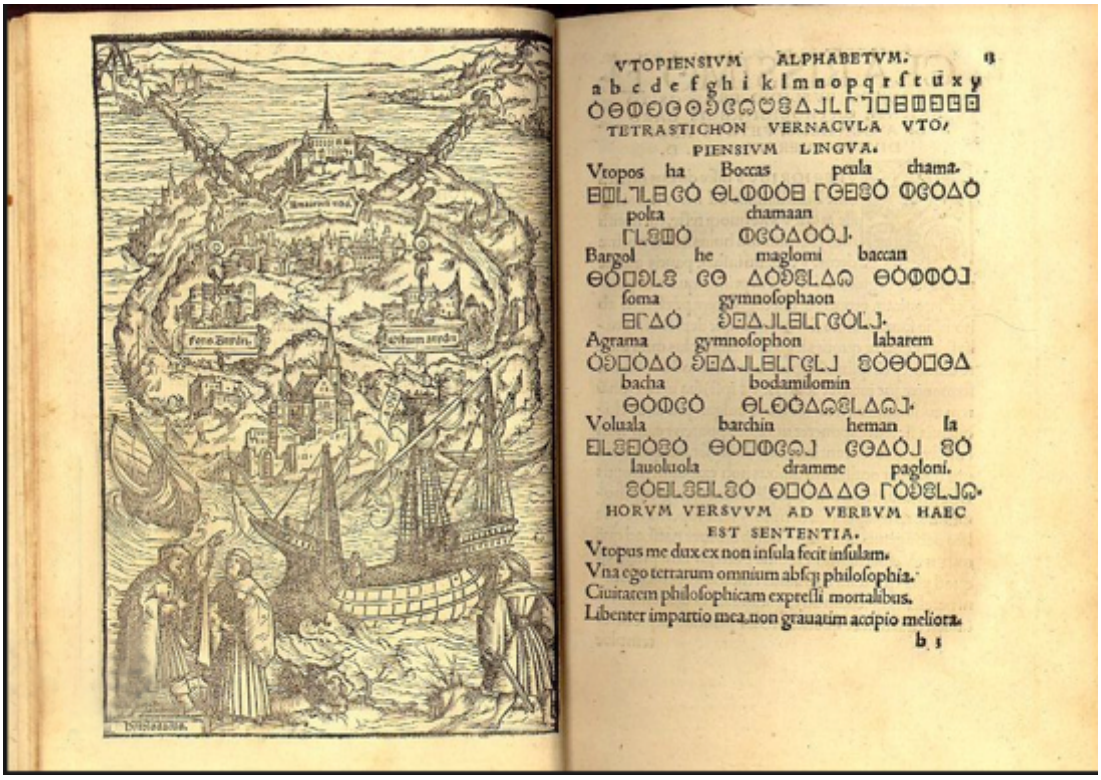


Figure 20: More's Book *Utopia*.

2.3.2 The Ancients alphabet for the *Stargate* series

The Ancients font was conceptualized by Ivana Vasak, and was first seen in the *Stargate-1* episode titled, 'Torment of Tantalus'. It was later refined and alphabetized by Boyd Godfrey for the pilot episode of *Stargate Atlantis*. It is the written language of the Ancients (Anquietas), a race of highly advanced 'ancient' Humans who evolved in this galaxy millions of years ago. .

With 25 letters in total, the alphabet is written in horizontal lines from left-to-right, top-to-bottom, with no symbols for punctuation. For aesthetic reasons, there are no spaces between words, and letters and sentences are aligned in rectangular rows when used in monumental and decorative inscriptions and short informative signs. However, in normal computer text, spaces are used between words. The letters can be stretched and skewed to various widths, heights and font sizes.

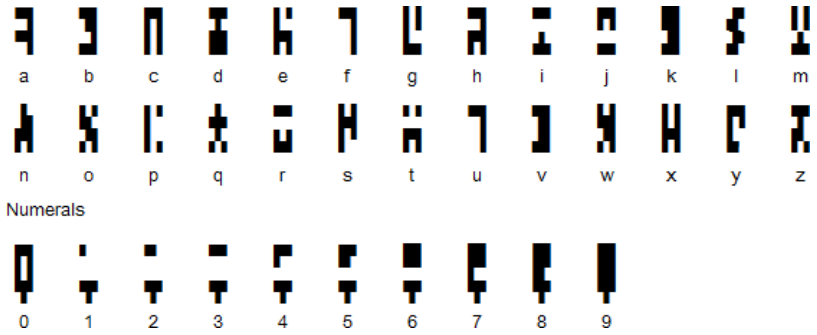


Figure 21: The Ancients alphabet.

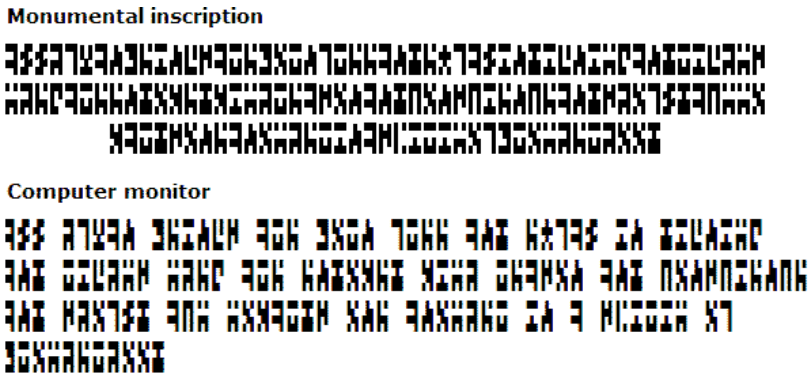


Figure 22: All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.

2.3.3 Aurebesh for Star Wars

The Aurebesh, known as Galactic Basic, is used to write the language of the Galactic Empire. It appears in the film *Return of the Jedi* and a number of *Star Wars*-related publications. The name Aurebesh is a combination of the first two letters of the alphabet: *aurek* and *besh*. Originally created by Joe Hohnston, a designer and F/X expert on the *Stars Wars* films, the alphabet itself was designed by graphic artist Stephen Crane.

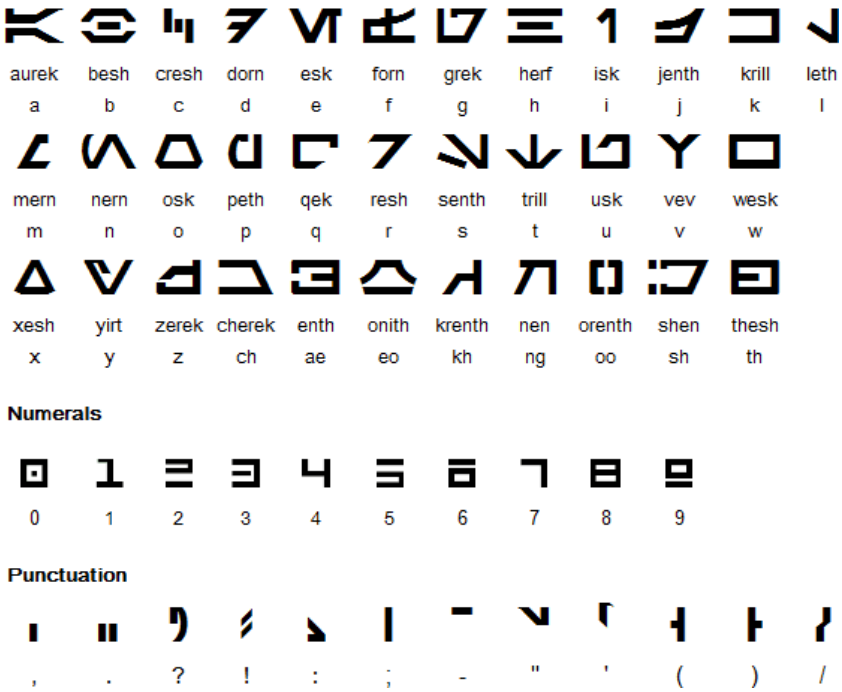


Figure 23: Aurebesh, a Galactic Basic alphabet.

2.3.4 Atlantean for the film *Atlantis: The Lost Empire*

The Atlantean language was created for the Disney film *Atlantis: The Lost Empire* by Marc Okrand. He worked from 1996-2001 with John Emerson, a designer at Disney, to produce an alphabet for the language.

The Atlantean language is based upon the fictitious idea that it is the 'Tower of Babel' of language, from which all languages descended. It has no punctuation or capitalization, and is written left-to-right for the first line, right-to-left the second, then left-to-right the third, and so on. It is a language based on an elaborate science fiction fantasy of the Atlantis Lost Empire mythos as well as historical reconstructions and realities.

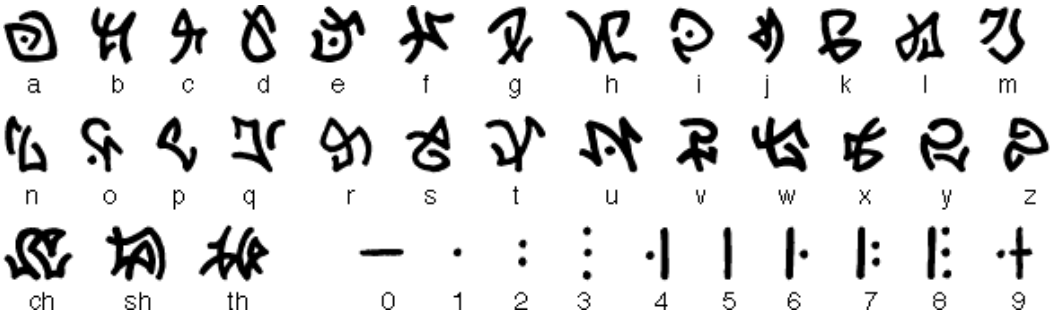


Figure 24: The Atlantean alphabet.

2.3.5 Interlac for the DC Comics language of the United Planets

In DC ComicsCo 30th century Legion of Superheroes, Interlac is the language of the United Planets. The Legion of Superheroes came from hugely diverse backgrounds and fought evil forces from faraway alien planets, thus a common language like Interlac was a necessity. Paul Levits and Keith Giffen standardized the alphabet into a consistent set in the June 1984 comic *Legion of Super-Heroes* (vol. 2) #312. The language first appeared in a 1969 edition of Adventure Comics. The Interlac alphabet corresponds perfectly to the twenty-six letters of the Latin alphabet, and the numbering system corresponds to Earth Base-Ten form.

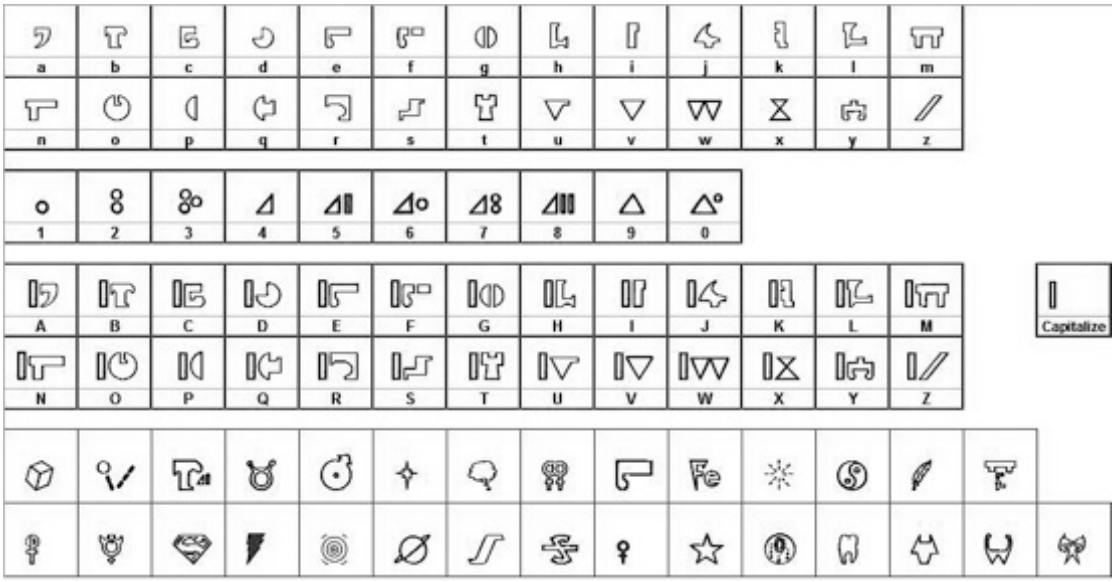


Figure 25: The Interlac alphabet.

2.3.6 Hymmnos for the video game series *Ar Tonelico*

Akira Tsuchiya created the Hymmnos alphabet for the video game series *Ar Tonelico* (アルトネリコ). The game is set in a distant future in 3700 AD, in which Hymmnos is a descendent of English with Japanese, Saskirt, and German influences. It is used mainly to write the fictional language of the same name though it is suitable for English or any other language with standard Latin orthography.

Hymmnos is written from left-to-right in horizontal lines, with upper and lower case letters. The uppercase letters mark emotional inflections in the Pastalia dialect.

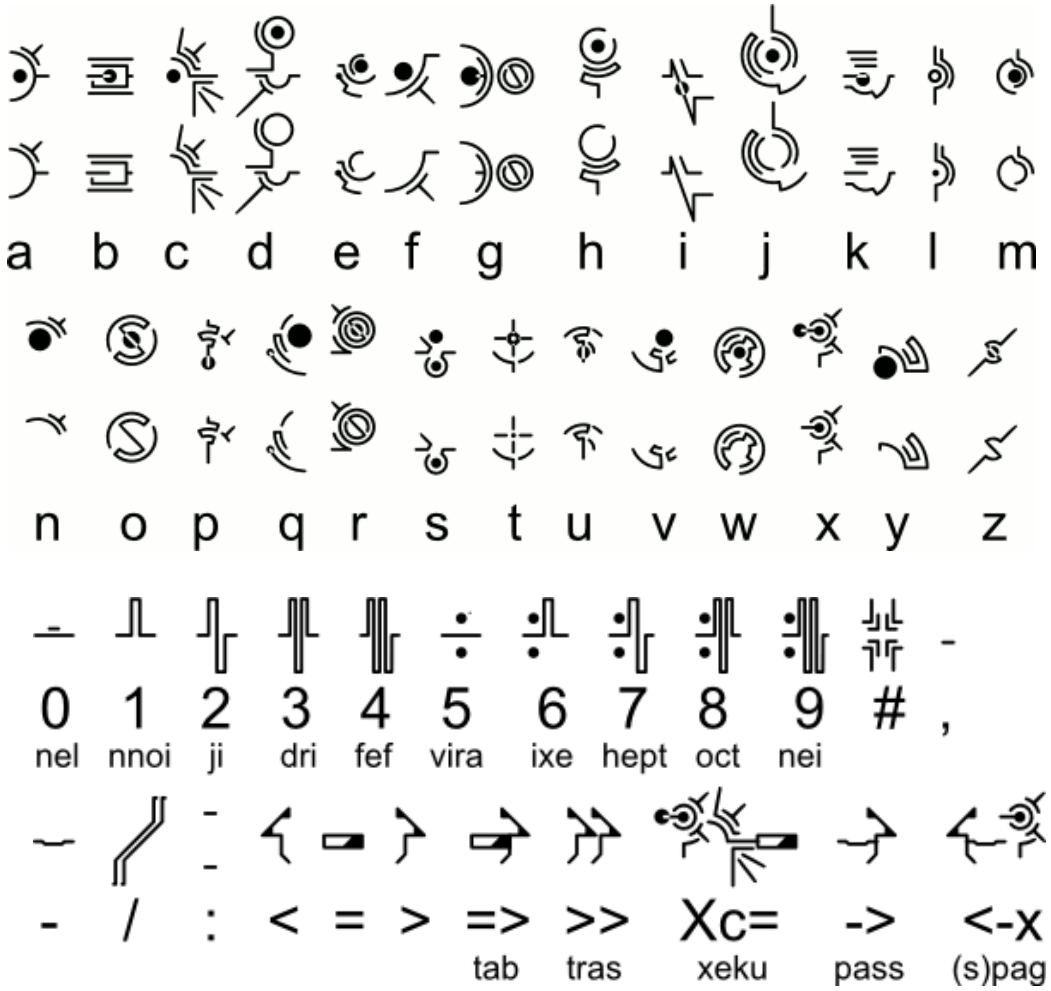


Figure 26: The Hymmnos alphabet and numerals.

Chapter Three

Methods Of Constructed Pictographic Communication Systems

3.1. Emoticons

- 3.1.1Western styles
- 3.1.2 Eastern styles
  - 3.1.2.1 Kaomoji (Japanese emoticon)
  - 3.1.2.2 Korean emoticon
  - 3.1.2.3 Chinese ideographic style
- 3.1.3 iConji
- 3.1.4 Emoji

3.2 Blissymbolics

3.3 Isotype

3.4 Nobel Universal Graphical Language

3.5 Icon-Language (Pictoperanto)

3.6 LoCoS Universal Visible Language

3.7 Earth Language – EL

3.8 Pictographic projects

- 3.8.1 Frutiger Universal Means Perception
- 3.8.2 Xu Bing *Book from the Ground*
- 3.8.3 Juli Gudehuse *Book of Genesis*
- 3.8.4 *The Elephant's Memory*
- 3.8.5 *The Noun Project*

3.9 Pictorial messages

- 3.9.1 Warning messages for future humans - WIPP Warning markers

3.10 Summary for the strengths and the weaknesses of the constructed pictographic communication systems.

3.11 Universal facial expressions/Universal Grammar

3.11.1 Universal facial expressions

3.11.2 Chomsky's Universal Grammar

3.11.2.1 Criticisms of Chomsky's theories

3. Methods of constructed pictographic communication systems

A pictograph, also referred to as a pictogramme, pictogram, or picto, is considered an ideogram that conveys its meaning/information through its pictorial resemblance to a physical object.

Pictographs can be considered an art form or a written language, and are designated. Pictographs can fulfill many functions: they are used to replace written indications and instructions expressing regulatory, mandatory, warning and prohibitory information when that information must process quickly.

Pictographs are an effective tool in trans-language communication, transcending even variations in tongues and language families. They are an accurate tool in conveying a message when legal implications are involved whereby viewers of the pictograph must comply with the message conveyed for safety purposes for example. To improve a viewer's comprehension of the message conveyed, a pictograph must capture the viewer's attention in order to increase the awareness of risk.

Pictographs have the advantage of rapid and more accurate interpretation as opposed to that of words, thus serving as "instant reminders" of a message or hazard. Pictographs make warnings and messages more captivating or attention-grabbing, they improve legibility of the message, and they improve understanding of warnings for those with visual or literacy difficulties.

A certain level of effectiveness is required of pictographs especially when the information to be conveyed concerns safety. The ISO 9186 (Public Information Signs) is a method used in testing the comprehension and efficiency of pictographs. The ISO standard stipulates that a symbol is accepted if 67% of the users understand it in an unquestionable way or almost (ISO 9186 1989). In the United States, the pictograph must be understood by 85% of the users to be standardised.

Colour, shape and visual complexity are a key factors in the effectiveness of pictographs, however, meaningfulness remains the main difficulty in processing the iconic information represented in pictographs. Much of the empirical evidence on pictograph comprehension is to be found in specialised domain literature. Many studies have investigated the legibility of pictographs used to convey information to

people about their orientation in public space, the use of pharmaceutical products, road safety, and organization of the work environment.

The establishment of a universal language would bridge linguistic and cultural gaps in today's globalized world. But *debabelization*, or simplifying down to a single language, is very complex work, the best way out seems to be the use of instruments, which are, or have become, international. (Neurath 1936)

Karl Luwig von Bertalanffy (1901-1972), founder of General Systems Theory (1969), asserts that except for the immediate satisfaction of biological needs, man lives in a world not of things but of symbols. Austrian philosopher of science and sociologist Otto Neurath (1882–1945) explains that, "Pictures are a better mean of communication than words." (*Ibid*, 1936).

The 17th century philosopher Gottfried Wilhelm von Leibniz (1646-1716) was the first to imagine a contemporary full writing system where images are used to describe all human communication. Many critics dubbed this idea a "Romantic notion," based on a fascination with the perceived mystical nature of Eastern cultures. Others saw it as a linguistic impossibility. At times of crisis, visuals may serve as a fast and an easy way of communication, whereby comprehension becomes a necessity not a luxury. It is important to point out that this method of visual communication is not meant to be a substitution to any of the existing languages, but rather a supplement.

A particular method of enhancing the proposed visual language is to make use of 'crowd sourcing'. That is, to seek the help of the crowd to improve the existing symbols within the language, and to enrich it with more symbols entirely created by the people. With crowd sourcing, the task of developing and enriching the language is proposed to a group of people of different ages, made up of both genders with a wide pool of educational and cultural backgrounds, diverse knowledge, and varied expertise, some of which are professionals, as well as non-professionals. This means that designers as well as people from other disciplines will contribute to the maturation of the language, making the research a multidisciplinary one.

Most writing systems were derived from ideographic languages, but recently we witnessed the flourishing of pictographic languages. Some of which are:

Blissymbolics (Bliss 1965); International System of Typographic Picture Education (Isotype) (Neurath 1936); Nobel Universal Graphical Language (Randic 2010); iConji, a pictographic communication system (Staats 2010); and The Noun Project (Boatman 2011).

3.1. Emoticons

In the absence of physical presence, and hence body language and prosody, emoticons have played a significant role in expressing emotions in communication through technology. Emoticons are a metacommunicative pictorial representation of a facial expression. Through the act of texting via cyber communication, emoticons portray a range of feeling and tone through a number of facial gestures that convey particular emotions. The receiver of the communication is alerted to the intent and temper of the sender through the non-verbal communication of emoticons.

Emoticons were first officially published on March 30th, 1881 in an issue of *Puck*. They were commonly used in informal and humorous writing in the 19th century. The very first documented use of :-) and :-(was made by Scott Fahlman of Carnegie Mellon University in Pittsburgh, Pennsylvania, who specifically proposed that they be used to express emotion. On the 19th of September 1982, Fahlman proposed digital forms of emoticons. Although emoticons had already made an appearance in 1940s science fiction fandom (Benford 1996, p. 90), a lapse in cultural continuity between communities hindered its' spread.

In a 1936 *Harvard Lampoon* article, Alan Gregg proposed the following correctly oriented and non-sideways emoticons: (-) for smile, (--) for laugh (more teeth showing), (#) for frown, (*) for wink, and (#) for intense interest/attention, and incredulity.

In 1963, a large insurance company wanted to devise ways to boost employee morale. On order from the company, Harvey Ball created the now iconic 'smiley face', the yellow circle with two black dots for eyes and an upturned thick curve to represent a smiling mouth in. It is safe to conclude that this was the precursor for the basic graphic emoticon depicting a smiley face, and the inspiration for many emoticons that came later.

Kaomojis are a kind of emoticon developed in Japan that is written in parallel to the text and does not require a tilting of the head to read as is required for emoticons, they are written at a right angle to the text and are popular in Western countries. Kaomojis, made popular by Japanese users, first emerged on ASC11 NET of Japan in 1986.

3.1.1 Western styles

Western-style emoticons show the eyes on the left (colon or semi-colon), then the nose (an optional hyphen), and then the mouth (usually an opened/closed parenthesis, or straight line) :-). Consistent in form to some extent, basic emoticons can be rotated, thus become transformed.

Basic variations in emoticons can generate diverse meanings. A change in one or more of the characters in a Western-style emoticon can express a new feeling or slightly alter the mood conveyed. For example :(is meant to express sad and :((is meant to express very sad or weeping. A blush can be expressed as :"> . Other Western-style emoticons include wink ;), a grin :D, smug :->, and tongue out :P for disgust or silliness. Also frequently used is a <3 for a heart, and </3 for a broken heart, with several other hundreds of variations. (Dresner & Herring, 2010).

Computers are increasingly providing built-in support for non-Western writing systems. This has enabled the wide use of other glyphs to build emoticons. The 'shrug' emoticon, ¯he ツ)_/ 'shrug' emoticon,ツ from the Japanese katakana writing system.

3.1.2 Eastern styles

3.1.2.1 Kaomoji (Japanese emoticon)

Japanese emoticons (顔文字, Kaomoji) are comprehensible without the need to tilt one's head to the left. This resembles the format of (*_*). This face is outlined by parentheses, an underscore is commonly used for the mouth, and the asterisks represent the eyes. Other characters like hyphens or periods can be put in place of the underscore to convey different 'looks'. The period, for example, is used to represent a small, 'cuter' mouth, or sometimes a nose (^.^), or the mouth and nose can be entirely left out (^^).

In these emoticons, the eyes are the central character. Change the eyes, and the emotion or mood is changed.

As is the case in the following examples: different emotions can be conveyed by replacing the asterisk (eyes): (")(-_-)("), the 'T' can be put in the place of eyes to express sadness or weeping (T_T). The same emoticon (T_T) can be used to convey indifference, or being "unimpressed".

Because the emphasis is on the eyes, feelings and tones are expressed by changing the eyes. Other examples are, (x_x) which represents stress, or (-_-;) which represents anxiety or nervousness, with the semicolon depicting sweat. Embarrassment is indicated by /// which indicates blushing.

Also possible is to replace parentheses with braces, for example, {^_^} or to eliminate them entirely like in the following examples, ^^ >.< o_O O.O e_e e.e. Punctuation marks such as a quotation mark ", an apostrophe ', or semicolon ; are added to convey moods of apprehension, anxiety, or embarrassment, taking cue from the sweat drop used in popular Asian animation.

3.1.2.2 Korean emoticon

The Western style is hardly used in South Korea where the use of Korean Hangul letters is far more common. The Korean *jamo* (letters) make up the Korean style that when placed in various combinations can make up countless emoticons.

The Jamos used for the mouth and/or nose are as follows: ㅅ or ㅁ or ㅂ, while the eyes are made up of these Jamos: ㅇ, ㅎ, ㅍ. ㅇㅅㅇ, ㅇㅂㅇ, ㅇㅁㅇ and -ㅅ-. Faces such as 'ㅅ', "ㅅ", 'ㅂ' and 'ㅇ', using quotation marks " and apostrophes ' are also commonly used combinations. Depicting a crying face are vowel Jamos: ㅜ, ㅠ. Example: ㅜㅜ, ㅠㅠ and ㅠㅠ. When a comma or an underscore is added, the two character sets can be mixed together" ㅜ.ㅜ, ㅠ.ㅜ, ㅠ.ㅡ, ㅜ_ㅠ, ㅡ^ㅜ and ㅜㅇㅡ. Representing a smile/smiling face are: ^^ or ^오^ . Other emoticons made up by Jamos are: ~_~, --a, -6-, +0+.

3.1.2.3 Chinese ideographic style

Chinese emoticons follow a more ideographic style. For example, the character 囧,

means ‘bright’, however, it is used in the Chinese cyber-communication community to represent a frowning face. This character had long existed in Oracle bone script, its first use as an emoticon took place on January 20, 2005.

Other ideographic variants for 囧 include 崮 (king 囧), 茴 (queen 囧), 商 (囧 with hat), 囧興 (turtle), 卣 (Bomberman – the name of a game). The character 槑, which sounds like the word for ‘plum’ (梅), is used to represent double 呆 (dull), or extreme dullness. Chinese full characters can be duplicated to express emphasis (as opposed to the stylistic use of 槑).

3.1.3 iConji

In 2010, Kai Staats, founder and former CEO of Terra Soft Solutions, and his team created a new SMS communication system that combined the speed, variety and linguistic richness of a global art project. iConji is a pictographic communication system based on an open, visual vocabulary of characters with built-in translations to twelve languages. Its symbols are delivered electronically to computers, phones, tablets and other similar electronic devices.

In May 2010, iConji Messenger was released with support for Apple iOS (iPhone, iPad, iPod), (Figure 27), and most Web browsers. In December 2010, iConji Social was released as a Web application only, with support for Facebook and Twitter as a broadcast medium.

iConji Messenger consists of 1183 characters, known as the lexiConji (vocabulary), from base words commonly used in daily communications, word frequency lists, often-used mathematical and logical symbols, punctuation symbols, and the flags of all nations. The process of assembling a message from iConji characters is called iConjisation.

In February 2011, iConji launched its Artist Community, where users can create new characters, or a better version of an existing character, and submit their own design. There are several criteria for accepting a submitted character, but the process is made simple by using available online graphic templates, instructions and examples (Staats 2010). IConji is popular only in electronic communications throughout Japan.

Emoji icons, (described later), are heavily slanted towards conveying emotional ‘punctuation’, and are therefore more useful in augmenting SMS than they are in communicating complete stand-alone messages.

A user communicating with iConji can add metadata to elucidate meaning, and can include text content. To elaborate on meanings, users can also add character inflections. Inflections are represented by glyphs that are placed in certain positions around the base and the top of the iConji character. Inflections serve to eliminate ambiguity in instances where it could arise in a communication; they are usually understood from the context within which they are placed. iConji includes character inflections for past, present, and future verb tenses, adverbs, adjectives, and possessives.

Many iConji characters follow the format: noun + infinitive verb and enable unambiguous translation from its base English into other languages. This could by far be the most practical and adaptable method through which a base definition can exist given the various ways a verb can be conjugated.

Figure 27: A collection of iConji symbols

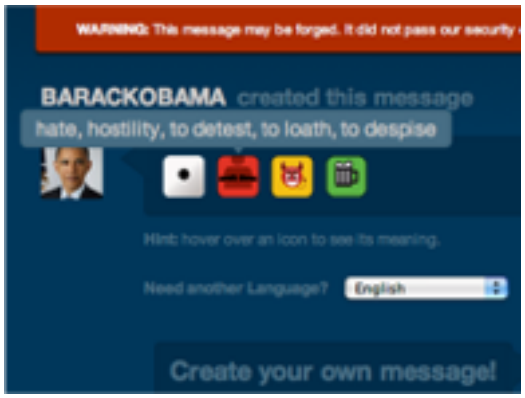


Figure 28: iConjisation message

3.1.4 Emoji

'Emoji' is the Japanese term for the ideograms or 'smileys' used in Japanese electronic messages and websites. The term literally translates to 'picture' (e) + 'letter' (moji), with its original meaning being 'pictograph'. In 1999, an employee at the Japanese wireless carrier NTT Docomo by the name of Shigetaka Kurita created Emoji. Kurita intended to create a raw draft of his idea for Emoji and propose it to large technology and communications corporations like Sharp, Panasonic and Fujitsu, who he had hoped would fund the development of Emoji. The corporations were not too eager on Kurita's idea, and so, "Faced with few options, he grabbed some paper and a pencil, gathered his team, and, without really knowing what he was doing, got to work. He aimed to create a complete set of 176 12-pixel by 12-pixel characters that could cover the entire breadth of human emotion." (Blagdon 2013, online source).

Although the three main Japanese operators, NTT DoCoMo, au, and SoftBank Mobile (formerly Vodafone), have each defined their own variants of Emoji, the characters used in Emoji are not very dissimilar from emoticons used elsewhere. A wider range of characters is provided in Emoji, with the icons standardized and built into handsets.

Today, handsets such as the Windows Phone 7 line and iPhone have Emoji character sets that have been incorporated into Unicode, whereas before, the Emoji character sets were only available through Japanese operators. In 2009, Emoji characters were made available on email services such as Gmail, which is accessed via Google Labs. In 2011, the Apple Mac OS X operating system began supporting Emoji, and in 2013, the book *Emoji Dick* by Fred Benenson, became the first Emoji novel accepted into the library of Congress (Bonnington 2013).

By the same token that typefaces can display a letter in a multitude of ways, an Emoji can vary from one font to another. Various tech companies have developed their own Emoji-displaying fonts; both colour and monochrome Emoji fonts exist, as do animated designs as well (El Khoury 2105). Some of those fonts have been open-sourced to permit their re-use (Davidson 2015). Other computing companies keep a proprietary hold on their fonts. For example, Apple Colour Emoji font belongs to Apple and can only be seen on Apple devices.

In October 2010, the Unicode Standard version 6.0 was released; it consisted of 722 of encoded Emoji characters. The new symbols were encoded in seven different blocks (some newly created), and a Unicode data file called Emojisources.txt that includes mappings to and from the Japanese vendors' legacy character sets was created.

As an alternative to encoding separate characters for flags, ‘Regional indicator symbols’ were defined as part of this set of characters. Unicode 7.0 included approximately 250 additional Emojis, many of which were adopted from Webdings and Wingdings fonts. Forty-one new Emoji, including combining characters that specify the skin tone of a preceding person Emoji; articles of sports equipment, Zodiac signs, new facial expressions, and symbols for places of worship are included in Unicode 8.0.

Vyvyan Evans, a linguist at Bangor University debates that Emoji is dragging us back to the dark ages “With its poodles, noodles and happy poos, Emoji is now the fastest growing language in the UK. What a huge step back for humanity.” (Evans 2015, online source).

Figure 29: A collection of Emoji symbols

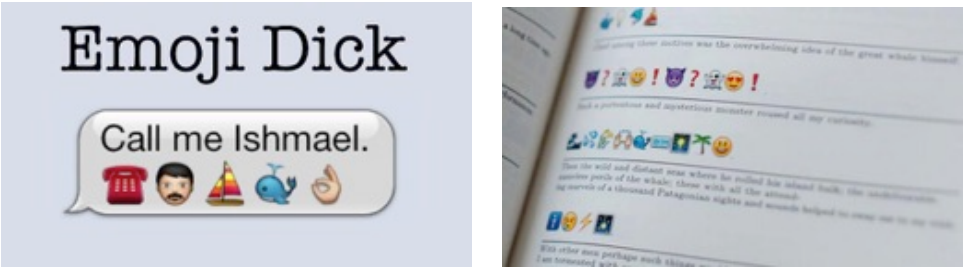


Figure 30: *Emoji Dick*, the first Emoji novel

Figure 31: The new Emoji with different skin tone

3.2 Blissymbolics

Blissymbolics is a communication system originally developed in the late 1940s by chemical engineer and semiotician Charles K. Bliss (1897–1985). It consists of a set of pictorial symbols that represent basic objects in the world and their features. It operates with about 100 basic symbols, which can be combined for any meaning needed in communication.

"In 1942 I named my symbols World Writing, then chose in 1947 an international scientific term Semantography. […] My friends argued that is customary to name new writing systems after the inventors Blissymbolics, or Blissymbols, or simplyBliss." (Bliss 1965, p.8). The term 'Semantography' is a combined derivation from the Greek words *semanticos* (signification meaning), and *graphien* (to write).

Bliss published *Semantography: A Non Alphabetical Symbol Writing Readable in All Languages* in 1949 in three large volumes. Bliss developed a second edition of his work, which he titled *Semantography (Blissymbolics)*, and which he published in Sydney in 1965. *Mr. Symbol Man*, a documentary film of his work, was published in 1975. Accompanying the film was a book that Bliss published by the same name.

The 30 symbols shown in Figure 32 are already used internationally: by putting a small action indicator on top of these symbols, the verbs to hear, to see, to write, to feel and to reason are formed. Bliss's book explores six aspects:

[1] Symbol combinations in all fields of human endeavour, such as commerce, banking, shipping, customs, stores, ambulances and hospitals, as well as in all industries, across all the sciences, and in philosophy, religion and even poetry.

[2] Simple symbolic logic.

[3] Simple semantic ethics, evolution, religion, God, etc.

[4] A universal natural ethnic encompassing all religions.

[5] The biochemical discovery that cells act ethically in all creatures.

[6] Archaeological discoveries.

Blissymbolics is made of basic geometrical shapes, additional constructed shapes, arrows, pointers, and can be supplemented by Arabic numerals and standard punctuation marks. The marks are arranged according to a very specific placement on a matrix square with an earthling, midline and skyline.

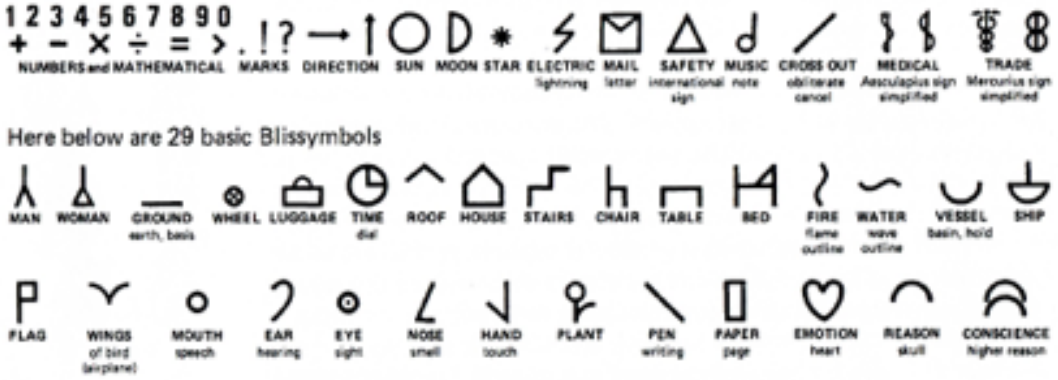


Figure 32: Blissymbolics basics

Bliss-words are arranged in a linear manner left-to-right, and have spaces between them. When arranged correctly, they can form sentences.

The BCI Guidelines explains the variety of technical descriptions of its construction such as ‘semantic modifiers’, ‘privation’, ‘generalisation’, ‘constituence’, ‘temporality’ and ‘gloss’.

Bliss-words can be sequenced to form many types of sentences and express many grammatical capabilities. Simple shapes are used to keep the symbols easy to draw, and because both abstract and concrete levels of concepts can be represented, Blissymbolics can be applied to both children and adults, and is therefore appropriate for people with a wide range of intellectual abilities.

However, prior learning of the symbol and the grammatical reconstruction are required for the understanding of Blissymbolics. ‘Composite Bliss Characters’ are a result of combining iconic signs that are essentially pictures of things and that are augmented by ideographic signs (and a series of arbitrary signs).

The Blissymbolics language is currently composed of over 4000 graphic symbols. Each symbol or Bliss-word is composed of one or more Bliss-characters, which can be combined and recombined in endless ways to create new symbols.

Blissymbolics has been used as the basis of several systems for the purpose of international communication. Moreover, when viewed as a typographic exercise, Blissymbolics has given rise to a set of symbols and have underlying logic: the adaption of typographic terminology to reflect the natural basis of many of the signs. The baseline line becomes the earthling and the cap height the skyline. (Crow 2006, p.89)

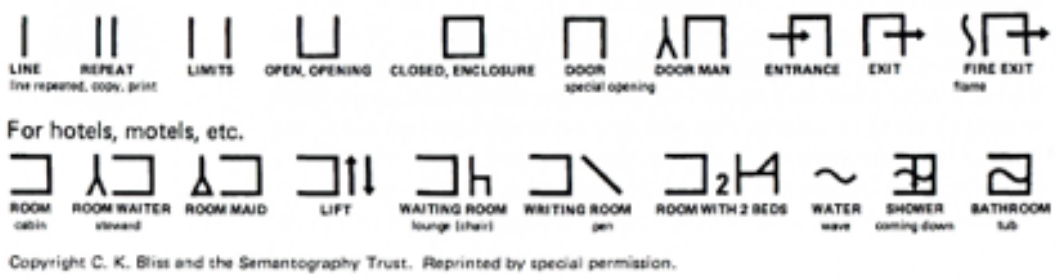


Figure 33: A collection of Blissymbolics combination

In 1982 Bliss granted the nonprofit Blissymbolics Communication International (BCI) a perpetual, worldwide, exclusive license for the use and publication of Blissymbols for persons with communication, language, and learning difficulties. (Stott 1997).

The Blissymbolics Communication International (BCI) Authorized Vocabulary – BCI-AV – represents the latest set of formally approved Blissymbols that appear in Bliss dictionaries. The BCI standard Blissymbolics language structure and vocabulary is based on and derived from Blisses work *Semantography* (1949). BCI develops Blissymbolics in accordance with the needs of its users, which include national, cultural and developmental differences; maintenance of the logic of the system; maintenance of Blissymbolics as a multicultural language; and sensitivity to the practical and pragmatic needs for communication (Blissymbolics Communication International 2012).

There are also a few high-tech adaptations of Blissymbolics, although their effectiveness and reach are unclear:
- Blisstalk, a symbol-to-speech device (Hunnicut 1984).
- BlissInternet, a program for communicating by email.
(http://www.blissymbolics.org/blissinternet.shtml)

- BlissTool, a chat program
(http://membres.lycos.fr/jfbouzereau/BLISS/bliss0.html)

3.3 Isotype: International picture language

In the 1930s, Austrian philosopher of science, sociologist, and political economist Otto Neurath (1882-1945) developed Isotype, (International System of TYpographic Picture Education) also known as the Vienna Method of Pictorial Statistics - (*Wiener Methode der Bildstatistik*). It is a communication system that uses a pictorial form within a two-dimensional syntax to show facts and quantitative information: social, technological, biological and historical connections. It was developed at the Social and Economic Museum of Vienna - (*Gesellschafts- und Wirtschaftsmuseum in Wien*).

Isotype is an example of the sort of visual statements Otto Neurath wished to make with the help of the language he had created; it gives a glimpse of what he hoped to create in his *Isotype Encyclopedia* or *Visual Thesaurus* (Neurath 1974, p.135).

The Vienna Circle of philosophers and literary figures believed that traditional, language-based philosophy was despairingly bogged down in metaphysics. The Vienna Circle advocated logical positivism, a philosophy based largely on the ideas of Rudolf Carnap and Ludwig Wittgenstein. Neurath was a leading figure in this group, who maintained that mathematics was the only means through which we can escape the inherent limits of language. This included the mathematics used to represent logic and choice, such as Boolean algebra. This approach was seamlessly consistent with Neurath's ideas for presenting social and economic truths in numerical, graphic form.

Many of the Isotype pictograms were created by Gerd Arntz (1900-1988) a graphic designer hired by Neurath in 1928. Arntz emphasized the simplification of shapes and silhouetting for easy reproduction and high-contrast recognizability. He drew over 4,000 Isotype symbols, which were reproduced by linoleum block prints. His direct and clean graphic style helped set the tone for future symbols in the coming decades.

By the early 1930's, Neurath headed a team of 25 employees divided into four groups:
1) Data Collectors: Comprised of historians, statisticians and economists.
2) Transformers: Visual editors and liaisons between the data collectors and the graphic artists.

3) Graphic Artists: Illustrators who drew the symbols and artwork.
4) Technical Assistants: Assisted in paste-up, colouring and photography.

In his book *International Picture Language: The First Rules of Isotype* (1936), Neurath introduced signs and putting them together, grouping pictures and other things together, the number-fact pictures and their rules, and pictures in the language of geometry. He preferred a method of understanding fact in a more easily understood form: numbers, and rejected histograms with numerical scales, pie charts and continuous line charts. A series of identical pictorial elements or signs represented numbers, each of them representing a defined quantity.

Linguistic perspective

Neurath's pictorial system had its foundations in the linguistic principle that meaning could be formed by the composite collection of signs. The unitised nature of language was employed to build groupings of signs whose meanings were determined by their relationship to other signs around them. The units of Isotype have a different 'sense' when placed in different positions.

> In particular I like being able to combine similar symbols in different ways without destroying their visual power. This active element belongs also in a special sense to writing when it is regarded as a putting together of single words. It was this possibility of combining things, which was at the bottom of the joy I took in symbols, whether they were in isolation and could be put together or in combinations, which could be split up and then recombined in different ways. (Rotha 1947, p. 55)

Among Neurath's pictographs were some that represented different industries and forms of communication. These pictorial 'world supplements', while being completely comprehensible in and of themselves, can assume other meanings in combination or through other forms of manipulation.

Neurath introduced two basic rules: the first of these related to the presentation of statistics by means of icons, and held that an icon represents a certain quantity or amount of things and that more signs represent a greater quantity or amount. The second was a general rule that perspective should not be used.

The graphic treatment for all of Neurath's pictures was about what the observer actually saw, rather than the spoken or written words associated with the person or the

object. The picture had to present the important face/characteristic, and then the less important details. The Isotype grammar could import further meanings, either through the usage of colour and texture or by adding more pictographs.

While working at the museum, Neurath began his collaboration with Marie Reidemeister. In 1940, both Neurath and Reidemeister fled the Nazi invasion of Holland to England, where they spent a year in internment as the duo married and resumed their work in Oxford, founding the Isotype Institute.

After Neurath died in 1945, his wife carried on with their work until the 1960s mostly through production of educational books for children. Her publications clearly explained complex subject matter, often about the physical world, scientific discoveries and the people of non-Western cultures.

Visual education was always the prime motive behind Isotype, which was worked out in exhibitions and books designed to inform ordinary citizens (including schoolchildren) about their place in the world. It was never intended to replace verbal language; it was a 'helping language' always accompanied by verbal elements. Neurath realized that it could never be a fully developed language, and therefore he called it a 'language-like technique'. (Isotype Revisited, 2011 online source).

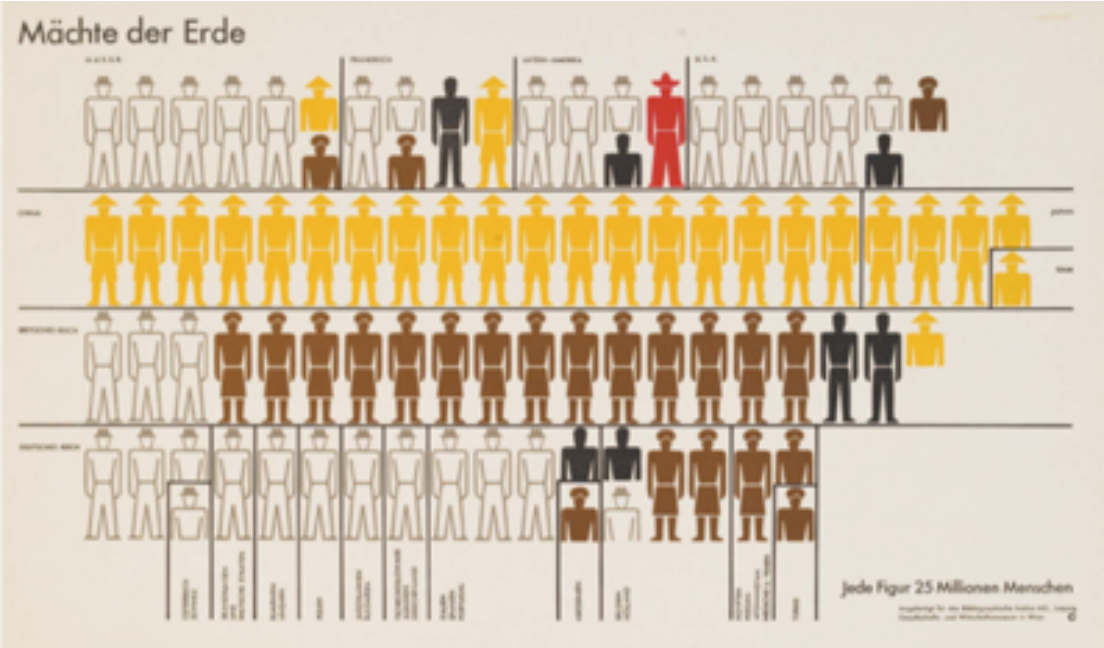


Figure 34: Man of the Earth, Isotype project

Figure 35: Better farming for better living in the western region, IBADAN: western regional government, 1955

3.4 Nobel Universal Graphical Language

Named after the chemist Alfred Nobel, the Nobel Language was created in 2010 by Milan Randic, Professor emeritus in the department of mathematics and computer science at Drake University, United States. After seeing Chinese script during a visit to China and japan left an impression on Randic, he began working on developing Nobel and started with 30 basic signs that require little to no explanation, and that can be used and understood across two different languages.

Nobel pictographic language is based around 100 basic signs and 60 arrows to which around 20 sign modifications can be added. Another 30 conventional signs were added, making a total of 130 signs of Nobel and 60 arrow types.

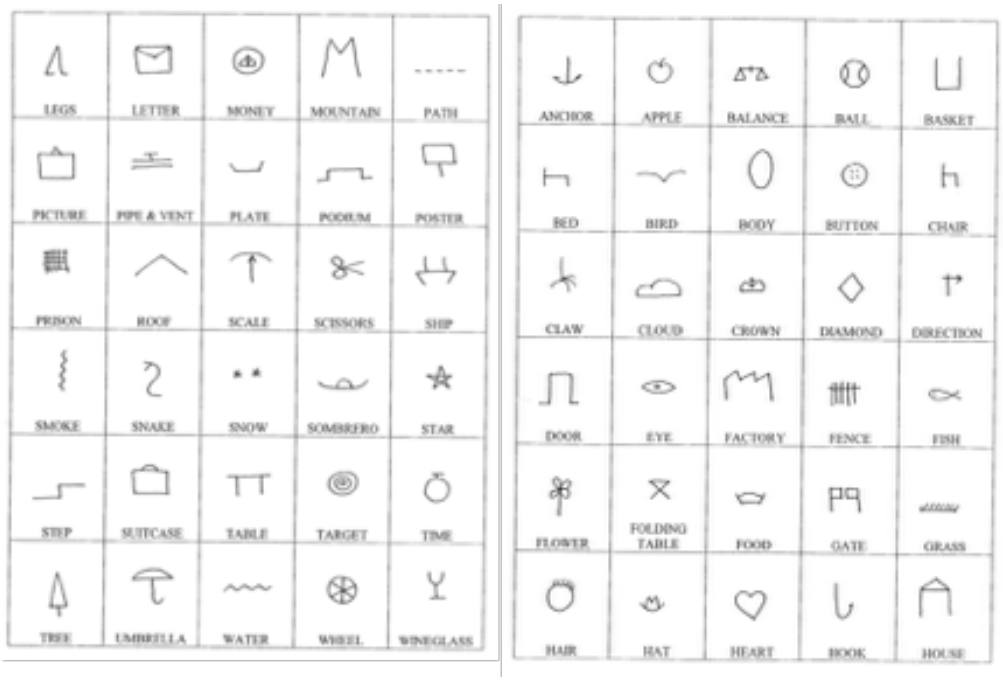


Figure 36: Nobel Universal basic signs

Part one of Randic's book, *Nobel Universal Graphical Language*, begins with a list of 90 basic signs, expanded into more than a thousand fundamental and complex combinations of signs. In part two, basic operations are carried out on signs, operations such as doubling, tripling, inversion, crossing of signs and using opposites as reciprocals and emphasis (which increase the vocabulary). Part three lays out the basic arrows and the combinations between arrows and signs, which also augment the vocabulary. Additionally, Randic recapitulates a selection of signs for various countries and states, as well as animals and plants. Part four of the book is an introduction to the grammar of Nobel, while part five is a section of folk proverbs and quotes from Lao-Tau (604-531 BC). The final part, part 6, is a dictionary of Nobel-English /English- Nobel language, and a comparative dictionary of Nobel: a graphical thesaurus of Nobel.

In the book *Nobel Universal Graphical Language*, all aspects of the basic signs and arrows of Nobel are covered, along with the grammar of this constructed language, as well as their various combinations, and the particulars of the more complex semantic units. The design of the Nobel language was intended to meet the following characteristic requirements:

[1] Small numbers of basic signs.

[2] Signs can be easily recognized.

[3] Signs can be easily reproduce.

[4] Combinations are to be limited to three signs.
[5] Complementary signs.

There are many signs that can be easily recognized, but in order to be acceptable for Nobel, they also need to be easily reproduced, because that will facilitate communication. Also, when making combinations of signs, one has to enforce some restriction in order to maintain clarity: no more than three signs combined to form a single word. Finally, the last requirement, complementary signs are to facilitate the learning and remembering of the language.

3.5 Icon-language - Pictoperanto

Pictoperanto is a language designed by Professor emeritus Jochen Gros, and is comprised of more than 1000 original pictograms, icons and graphic metaphors independent from existing pictogram systems and icon collections. An image vocabulary designed in three different typefaces made up of a visual grammar.

Prior to his retirement, Gros taught Design Theory from 1972 to 2000 at the Hochschule für Gestaltung Offenbach (Offenbach University of Art and Design). Since his retirement, Gros focused his work on the illustration of words and the philosophy of concepts.

The grammar structure of the icon-language

The structure of text-based notions and sentences is reliant on grammatical rules. In visual grammar, the 'rules' are far more simplified, almost self-evident. Visual grammar allows for an expansion or duplication of pictograms and icon vocabulary (Gros 2007, p.228-229).

Visual grammar

Visual grammar is essential to the accuracy and precision of icon vocabulary. Giving direct and explicit form to patterns of perception that are both clear and virtually automatic in related cultures, allows for an agreement that leaves no room for doubt. Gros divided his visual grammar into the following categories:
[1] Visual Emphasis (*backgrounding*).
[2] Adjectives/Determinatives.
[3] Visual Verbs (speed lines, animations, suggest action, action words, verbs).

[4] Compound Icons.

[5] Plural.

[6] Epitomes, metaphors, and multiple epitomes.

[7] Pronoun (based on common finger pointing).

[8] Genitive.

[9] Possessive Pronoun (combing the personal pronoun with the genitive).

[10] Auxiliary verb (based on body language).

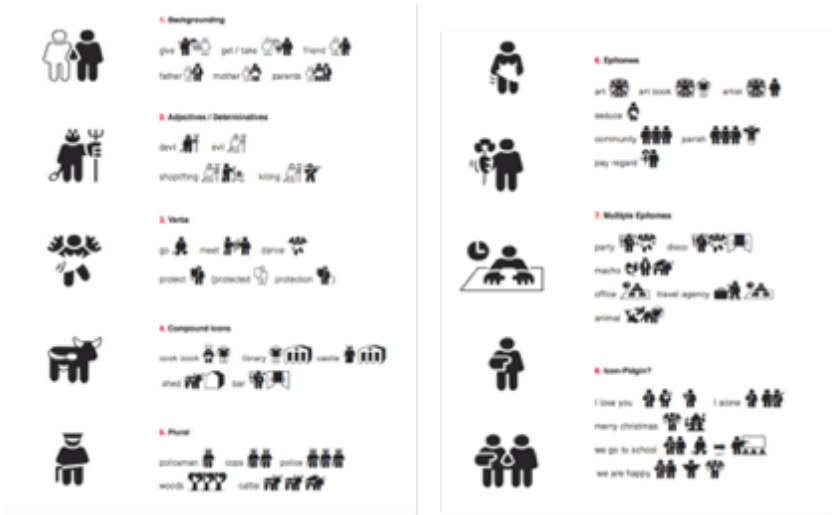


Figure 37: Icon Language visual grammar examples

Icon fonts

To enable icon-typing, icon fonts were created as a tool to allow for picture writing using a keyboard. Thereby translating vision to practice. Icon-fonts and visual grammar, according to Gros, are prerequisites for any step-by-step creation of various designs. This may lead to a new icon language. Icon-typing is made possible through two metods. The first is TrueType, or the Open Type system, which is used to create fonts. The second is the Auto Correct mode. (Gros 2007, p. 228-229)

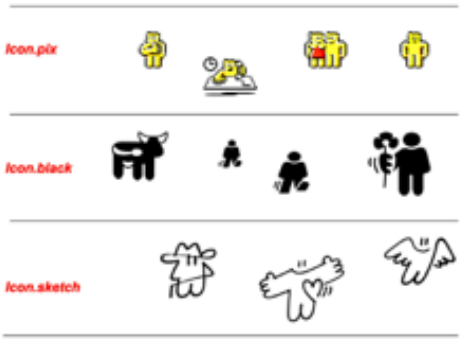


Figure 38: Icon fonts

3.6 LoCoS Universal Visible Language

Graphic/sign designer Yukio Ota developed LoCoS in Japan in 1964. LoCoS is a visible language comprised of pictograms and ideograms, and is heavily influenced by Blissymbolics. LoCoS is an acronym for 'Lovers Communication System', and is loosely derived from the Greek term logos. The intention behind the name was to convey a sense of ease and directness in sharing thoughts, as effortlessly as communication occurs when people are in love. (Ota 1973, p.15)

LoCoS was intended as a communication tool that would connect people who do not share a common spoken language. Rather, it is a universal non-verbal/non-spoken language that could be learned in a day.

Ota felt the language was still in its development phase and required further fine-tuning by other designers, as well as a natural evolution through use by a community. Thus an offer to purchase the language made to Ota in 1982 by the Japanese Telephone Company was rejected in 1982. The U.S.-based user interface design company AMandA began collaborating with Ota in 2005 in an effort to adapt LoCoS to electronic mobile devices for instant messaging.

LoCoS symbols

LoCos is comprised of eight major symbols:

[1] A circle represents the sun and/or day

[2] A ring shape represents man.

[3] There is a thing, represented by a square.

[4] A triangle with a cut-off top represents thought

[5] A heart represents feeling.

[6] A low straight line represents land/place.

[7] A question mark indicates a question.

[8] A single point represents a point or existence.

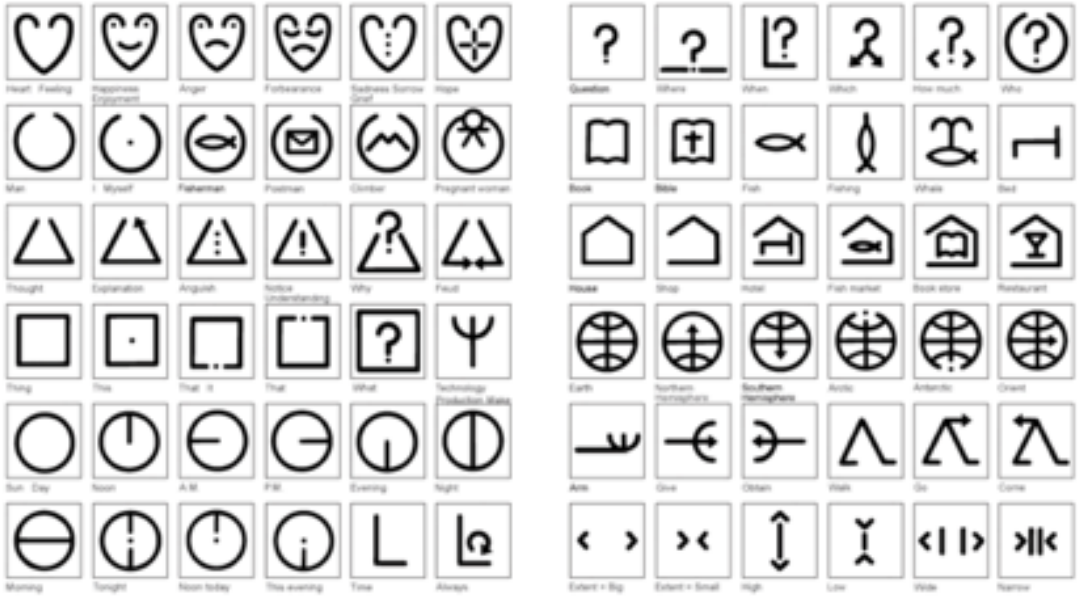


Figure 39: LoCoS symbols

Forming words

According to Ota, officially, a possible 80 words can be formed when following the basic word syntax. When different symbols are combined in a number of ways, words are formed. Examples are:

‘Fisherman’: A fish inside the ring shape.

‘Today’: A dot inside the circle shape.

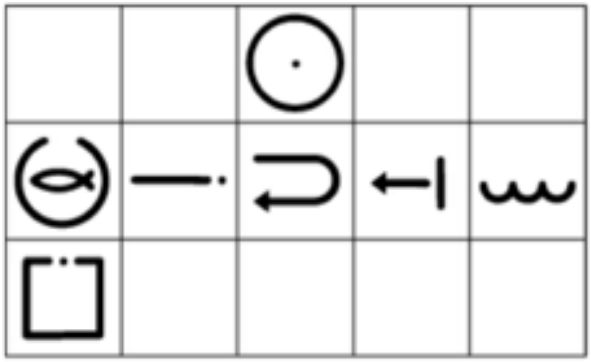


Figure 40: Example of words forming

Words can form sentences when placed in certain combinations. Three rows are used when writing sentences. Core words such as nouns, verbs, and direct/indirect objects are placed in the middle row. Adverbs are placed in the top row to modify verbs. Adjectives are laced in the bottom row to modify nouns.

As LoCoS was designed nearly half a century ago, the repertoire of the current LoCoS signs needs to be extended, revised, and updated. Signs need to be tested for comprehensibility in the various cultures of the target users.

Ota concluded that Universal Visible Language evolves from situational semantics, situational syntactics, and situational pragmatics. It cannot be conceived without the acknowledgement that language is innately context dependent. Language cannot be thought of as an abstract construct. LoCoS has been developed with the purpose to find the most adequate and least arbitrary visualisations for concepts, occurrences, and things and beings that we encounter in our own particular environments. Transcending the vernacular to reach out to the world of common sense, where communication between people happens instantaneous and whole.

3.7 EL - Earth Language

EL (Earth Language) is a language of symbols based on Blissymbolics. Intended as a global language system, EL was developed in 1988 by Japanese designer Yoshiko McFarland. EL began as a written language, and soon developed to include hand-signs. Resulting in a multi-method auxiliary language with various types of signs. Professor Takashi Tanokami, creator of the Japanese sign language, was a major supporter of the development of EL.

Describing EL, McFarland says, "EL is an experimental system for the integration of all kinds of communication wisdom from human history. It is to help people on earth to awake to their inner nature, getting back the healthier connection between their thoughts and their bodies and lives, as the new system of containers of images." (online source).

EL was first written about in a Japanese publication in 1992. For this article, McFarland personally drew each EL symbol by hand using a ruler. In 1994, McFarland's son Tomo programmed an EL word processor on a computer (which had Japanese software). This enabled EL typing. By the end of 1996, McFarland began to build her EL website. A decade later, Jo Chen (software developer), created a new EL-compatible font.

Principles of EL

The basic symbols of EL are based on shapes found in nature, as opposed to referencing cultural and/or traditional elements. These symbols are commonly recognizable and transcend culture and language.

1-  : **Nature:** Dome, large cover shape.

2-  **Truth:** The original shape and the extensions are connected thus making it one.

3-  **Lives:** Life (the upside-down shape of heart)  **Love:** means thinking about other's lives from the heart.

4-  **Relations:** Two lines crossing, or two tips touching.

5-  **Peace and Harmony.**  **Infinite.**  **Balance:** Balanced by the spinning top shape.

EL uses fundamental ideograms made up of 91 symbols, including 70 bases, numerals, grammatical marks and brackets for managing information. Of the 70 EL bases, 50 are divided among definition and phonetics separately, not for both at once to maintain the consistency of the phonetic rules. Brackets in EL do not represent meaning, but they only represent phonetics.

Each symbol has a number, ASCII (American Standard Code for Information Interchange), hand sign, and a one-syllable name, which is its vocal code. The same-size square houses each symbol; a symbol is made up of a simple geometric shape. EL is centred more on visual communication. However, it is possible to speak EL using the vocal codes.

Each pronunciation of EL phonetics is a simplified shape of the main vocal organs. Ideographic marks show variations on standard pronunciation.

An EL ideogram shows a tangible thing/action/situation of being, and do not represent a verb on their own. A verb mark turns an ideogram/phrase into a verb.

The direction of EL writing is left-to-right. As a rule, the left character modifies the right character, and a conjunction mark connects words, phrases and sentences. A left-pointing basis relates to the origin or past, and a right-pointing basis relates to a heading situation or future.

In addition to the vocal codes, and the visual method (through writing) EL can be communicated through hand-shape signs, which show a base/notation, and hand-movement signs by drawing a base shape in the air.

3.8 Pictographic Projects

3.8.1 Frutiger Universal means perception

Two of the most widely used corporate typefaces (in the West) are Universal and Frutiger. Universal, along with its variety of weights and styles, was created by typographer Adrian Frutiger (1928-2015); who also created the eponymous typeface Frutiger. His monograph *Type, Sign, Symbol* written in 1980, draws a direct connection between his work in typography, to his designs of trademarks, then to pictorial signs that stand independent of the commercial world.

Frutiger sees that the design of letterforms and symbols are, "[…] a universal means of precipitin that accompanies mankind everywhere." (Frutiger 1980, p.48). *Type, Sign, Symbol* is reproduced in three languages and is in itself a testimony to his international concerns.

Frutiger's signs have to be learned, as opposed to Isotype, which is a mix of symbolic and iconic signs. This makes Frutiger's approach to pictorial script largely 'symbolic', they do not look like things they represent.

Frutiger takes cue from Saussure's idea of value, giving each sign a meaning not from the form of the sign, but from the other signs around it and its' relation to them. His signs include abstract notions such as love, life, death, passion, community, and peace. For example, 'passion', 'intimacy', and 'tenderness' are represented by extremely similar signs composed of two elements that only vary in position and scale. Learning the basic code is essential interpreting these signs. Another example is 'blood', 'wound' and 'combat', which have a more difficult underlying code to read. Once the reader learns the initial sign for 'blood', the metaphorical changes in the other symbols

can be interpreted; the sign for ‘blood’ is not figurative. Symbols relating to life are soft and round, while a symbol such as that of ‘wound’ has sharp edges, and so on. The geometry of Frutiger’s signs uses metaphor to great effect.

Figure 41: Example of Frutiger Universal means of perception (1) from left to right: meeting, enhancement, surrender, seed, bud, pregnancy, blood, wound, combat.

Figure 42: Example of Frutiger Universal means of perception (2) from left to right: passion, community, tenderness, birth, motherhood, tenderness, suffering, submission, and peace.

3.8.2 Xu Bing's *Book from the Ground*

The *Book from the Ground* project, by Chinese artist Xu Bing (b. 1955) is inspired by airport signage. The book is an attempt to create a universal pictographic language to tell stories; assuming it can be perceived regardless of the cultural background of the percipient.

The relationship between written symbols and visual communication has been the focal point of Xu Bing's career. His study of that relationship began in his iconic installation, *Book from the Sky* (1987-1991) in which he invented over 3000 original Chinese characters that were empty signifiers despite their meaningful appearance. Bing strives to create an awareness of how language fundamentally shapes our psychology, perception of reality and understanding of the world.

Book from the Ground is a collection of tens of thousands of informational and instructional pictographs from mathematics, chemistry, music, and the Internet that the artist has developed over the past 10 years. These pictographs represent the structural components of a communication system made up of complete and translatable pictures rather than alphabets. *Book from the Ground* project includes installations, documents, and animated videos.

> *Book from the Ground* is a novel written in a 'language of icons' that I have been collecting and organizing over the last few years. Regardless of cultural background, one should be able understand the text as long as one is thoroughly entangled in modern life. We have also created a 'font library' computer program to accompany the book. The user can type English sentences (we are still limited in this way, but the next step will include Chinese and other major languages) and the computer will instantaneously translate them into this language of icons. It can function as a 'dictionary', and in the future it will have practical applications. (Bing 2015)

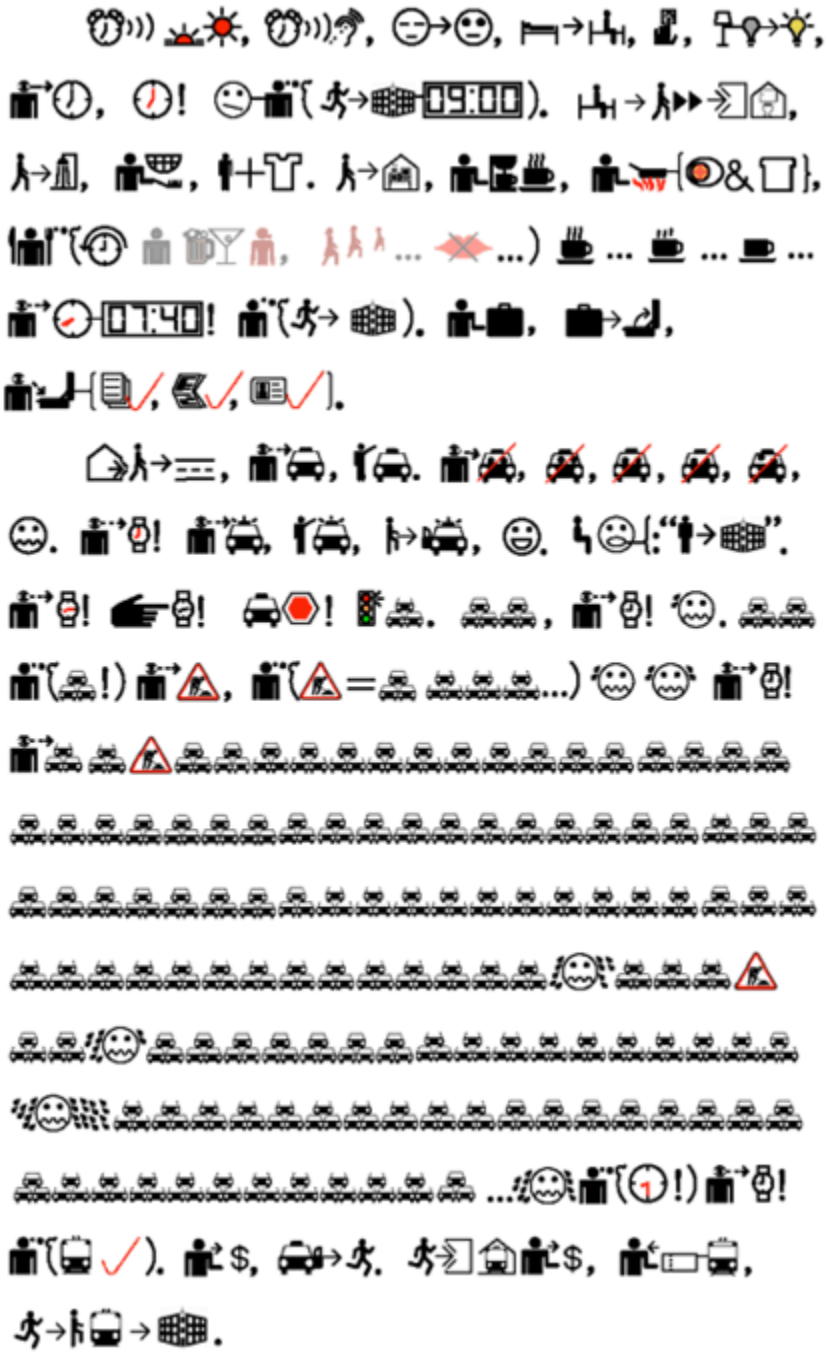


Figure 43: Collection of Xu Bing symbols

Book from the Ground

Book from the Ground is based on a full-length novel that chronicles a day in the life of Mr. Black. Instead of using a traditional language to tell the story of Mr. Black, the artist has narrated the book only using the icons, symbols and logos that pervade today's environment. The use of these icons as means for universal communication has increased exponentially in recent years, in tandem with a growing trend towards globalization and Internet use.

The *Book from the Ground* project is an effort to bring that concept up to a level of satisfaction. This is becoming a common notion of individuality where every culture provides the individual with some sense of identity, some regulation of behaviour, and some sense of personal place in the scheme of things. All persons are – to some extent – culturally bound. Yet, the flexibility of the multicultural personality allows great variation in adaptability and adjustment. These adjustments and adaptations, however, must always be dependent on some constant factors and common grounds.

3.8.3 Juli Gudehus *Book of Genesis*

Juli Gudehus (b. 1968) is a German graphic designer known for her project, the pictographic *Book of Genesis* (1997). The author tells the story of the Creation in the visual language of the 20th century. The story has been translated verse by verse into pictograms, labels and trademarks of consumption and contemporary systems of orientation and signals, and has also been translated into five languages.

Gudehus's take on the first book of the Bible in a modern visual language is an interesting attempt at testing our knowledge not of the Bible, but of icons. The endeavour itself is a sign of the times: icons are fast becoming a universal visual language.

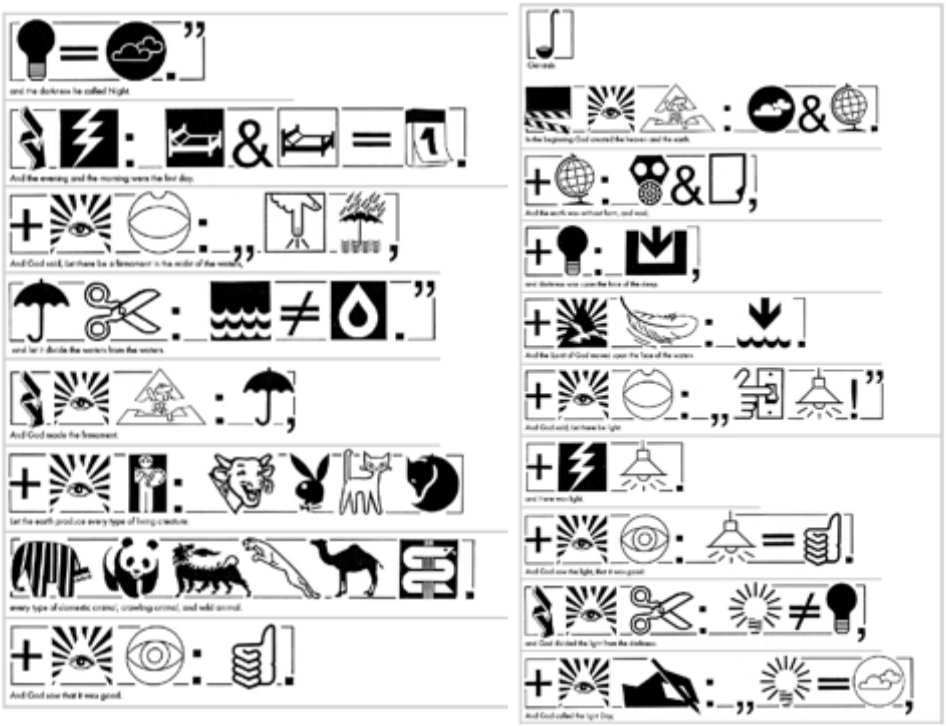


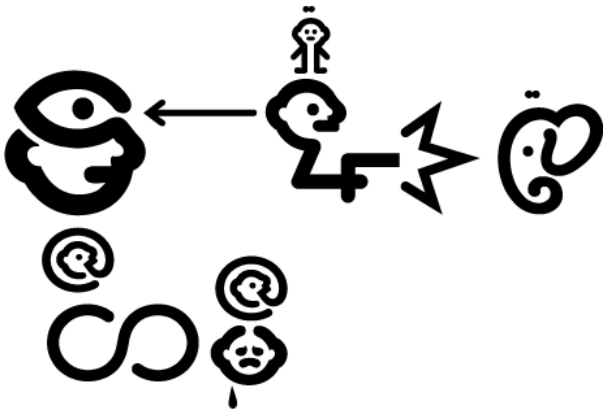
Figure 44: The *Book of Genesis* symbols

3.8.4 *Elephant's Memory*

The Elephant's Memory is project by Timothy Ingen Housz – a pictorial and iconic way of representing language. Letters and characters are symbols derived from icons and pictures of cave drawings. Housz went back to idea of pictorial communication, in a more contemporary and graphic approach

The Elephant's Memory is comprised of over 150 pictograms and ideograms that can be combined in a number of ways. Users from diverse cultures and cultural backgrounds can communicate with one another through new means of expression.

The system presents a playful learning environment oriented primarily towards children, and provides an explorational tool enabling new approaches to the concept of language. The pictograms develop a visual link between the members of a community and provide original material for families and educators to encourage dialogue and creativity. The Elephant's Memory is designed as an experimental workshop where innovative reflections on language, computers, and communication can be explored in small or large groups. As the Internet turns into a global multi-lingual community, the project searches for new ways to bridge cultures, and builds a transitional space between natural languages.



"Seeing elephants shot by men makes me cry"

Figure 45: Elephant's memory project sentence, "Seeing elephants shot by men makes me cry"

3.8.5 *The Noun Project*

In 2011, *The Noun Project*, based in Los Angeles, was co-founded by Edward Boatman, Sofya Polyakov, and Scott Thomas as a Kickstarter project. It is a platform

‘website’ created to build a free accessible collection of symbols. The idea is that graphic designers around the world have access to upload their symbol creations so that the website can serve as a resource for those searching for typographic symbols, and as a compendium of the design history of the genre. These are useful and applicable for all types of design projects including websites, user interfaces and print design.

Four stylistic guidelines are stated on the site:

[1] The symbol must only include the essential characteristics of the idea conveyed.

[2] The symbols must maintain a consistent design style.

[3] An industrial look to the designs is favoured over a hand-drawn look.

[4] Designers must avoid conveying personal opinions, feelings and beliefs.

Contributors select a public domain mark or a ‘Creative Commons’ attribution license, which enables others to use the symbol with attribution, free of charge. The attribution requirement can be waived upon payment of a nominal fee, which is split between the artist and *The Noun Project*

The symbols

The collections of symbols of *The Noun Project* are downloadable. Each one comes along with a title and credit line. *The Noun Project*'s aim is to create a single, free online library of globally commonly used symbols to potentially change the Internet world in a significant way. With the backing behind the project, the creators expect the website to grow into a user-friendly symbol search engine or symbols library.

Figure 46: The Noun Project website

Iconathons/civic symbols

Iconathons is a 'civic symbols design' workshops and networking for designers, urban planners, city staffers and developers. In 2011, several cities across the U.S. as a start participated in a series of design characters workshops. The aim is to add to the public domain a set of graphic symbols that can be used by both, private and public sectors, easily communicate universally and recognized conceptually to a diverse group of people.

There has been a debate on the project's legality because of the usage of symbols that are made available for free. Boatman states that the symbols on the site are licensed under creative commons attribution, or they are already used in the public domain.

3.9 Pictorial messages

Pictorial communications systems are comprised of simplified diagrams (sent as bitmaps) that aim to represent fundamental mathematical or physical concepts. The communication of these symbols relies on a mutual understanding between users of basic mathematics and geometry. Assuming a shared understanding of special shapes is a weak assumption, because people have different vision and therefore, a different way of interpreting visual information.

3.9.1 Warning messages for future humans - WIPP warning markers

The multigenerational warning sign, according to scientist Charles Dunn (1940) is *The Waste Isolation Pilot Plant*, or WIPP. WIPP is the world's third deep geological repository where transuranic radioactive waste used in the research and manufacture of nuclear weapons is disposed of, and where it will continue to be disposed of for the next 10,000 years. It is located approximately 26 miles (42 km) in eastern Eddy County, in an area known as the south-eastern New Mexico nuclear corridor.

Warning markers for long-term nuclear waste storage sites are required to prevent inadvertent human intrusion in the distant future. Two interdisciplinary teams have addressed the issues of physical durability and cognitive intelligibility of such markers for a U.S. government site in New Mexico. Preliminary design criteria have determined which materials are best suited to constitute markers of different sizes and shapes. A variety of linguistic, symbolic, and pictographic approaches to content have been suggested. Additional study and testing of both materials and messages is

required. International standardization of marker strategies is extremely desirable. (Lomberg and Hora 1997, online source).

Long-term markers

The WIPP site is located in a resource-rich area containing reserves of potash, crude oil, and natural gas. Exploiting these resources may be economically attractive to some future societies; however, scientists argued that these societies must have the facts it needs to protect itself from our wastes.

Long-term physical markers carry easily decoded, unambiguous messages intended to prevent inadvertent human intrusion. They are designed to have structural stability and resistance to environmental stresses. The marker development effort of WIPP used the timeframe of 10,000 years in design consideration, as that is the period of regulatory concern.

Because it is unknown how people will communicate 10,000 years from now, it is hard to predict what common spoken or written language will exist. Therefore, the markers must rely on gestures, pictures, and expressions to establish a dialogue with future societies.

Only recently has the formal archiving of information for the intended use of future generations become an endeavour. It is almost without precedent that there now exist efforts to create an easily decodable message, an anti-code, to facilitate understanding a hundred centuries from now.

Proposed marker systems for the WIPP

Passive Institutional Controls are the official title of the WIPP's marker system. The DOE (US Department of Energy) has been working with linguists, archaeologists, anthropologists, materials scientists, science fiction writers, and futurists since 1983 in developing a warning system.

The designs are suggested by the WIPP Marker Panel, which acts as a consulting body to Sandia National Laboratories. The 13 members of the Marker Panel were divided into two teams, Team A and Team B. Over a period of several months each team worked on a separate report, which outlined its recommendations.

Remarkably, the major strategic recommendations of each team were very similar, emphasizing the need for redundancy in markers and messages, multiple levels of message difficulty, use of a combination of text, symbols, and pictures, and the need for testing of marker designs.

Each team recommended that symbols be used to enhance the nature of the message. One team felt that pictograms should also be considered, and archetypal symbols, such as those described by the psychologist Carl Jung, be used in the overall design of markers and beams. Also recommended was that certain facial expressions, such as in Edvard Munch's painting *The Scream* be incorporated as symbols to convey the emotional nature of the danger.

The other team felt that use of such supposedly archetypal symbols was far too ambiguous and that any symbols used must be defined as part of the message itself by use of pictographs, showing, for example, that substances marked with the skull and crossbones were poisonous.

The information in the markers will be recorded in English, Spanish, Russian, French, Chinese, and Arabic, the six official languages of the United Nations, with room to be translated into further languages. The information in the markers will also be recorded in the Native American language, Navajo, which is native to the region. In addition to the pictographs, the team plans to submit their final plan to the U.S. Government by around 2028.

Figure 47: Proposed marker systems for the WIPP

3.10 Summary for the strengths and the weaknesses of the constructed pictographic communication systems.

Western and Eastern Style Emoticons:

Emoticons help serve as a social function and are very effective in helping users to interpret their conversational partner's meaning and attitude through digital mediums. However, some cross-cultural psychologists have noted the different conventions and usage of emoticon has varied according to users' cultural backgrounds. People living amongst collectivist cultures are more likely to employ Eastern style or vertical emoticons such as ^_^, while people from individualistic cultures are more likely to use a Western style or horizontal emoticons such as :-) (J. Park et al. 2014, p. 334). The differences in these conventions can create a communicative barrier between people of different cultures and could create confusion regarding its legibility.

Kaomoji

Japanese Kaomojis are focused on a code system that is developed around the usage of eyes that depict characters, movement, and emotion. These cultural elements are largely derived from the visual vocabulary and style of the Japanese manga comic books, where its familiarity around the world is debatable and dependent on many factors such as age and gender (Katsuno and Yano 2007, p.214). This narrows down the understanding of Kaomojis on a universal level and limits the usage to users with a background in Japanese culture and select niches around the world.

Korean Emoticon

The Korean Jamo letters bear a resemblance to real life facial expressions with emoticons resembling basic emotions such as happiness, sadness, and flirtatiousness. In an experiment to evaluate their universality, a number of participants were shown several emotions and asked to interpret them. The participants included a variety of exposed and non-exposed people to Eastern style emoticons. The emoticons of smiling faces and winking eyes, such as (^-^) and (^o^), and (^-~) were proven to be culturally neutral. However, some emoticons such as the crying face ㅜ_ㅜ were proven to be culturally dependent. The study concluded that the Korean emoticons that are corresponding with facial expressions were neutral and universal enough to be understood by people with no Korean cultural background, and the emoticons with culturally oriented characters such as jamo letters were harder to understand (Ji 2014, p. 9).

Chinese Ideographic Style

The Chinese emoticons are very different and exceptional in linguistic function in comparison to other internet languages. The Chinese language has a very large pool of characters as well as a close bond between graphic and meaning creating a lot more room for emoticons to grow. In the early Internet era, all East Asian characters were required to be represented in a full-width encoding system, which is why the characters are usually wider than most latin characters. However, nowadays, all other characters, except for Chinese, have adopted half-width encoding. This widened effect of the Chinese emoticons has caused them to lose the emotional punch that is associated with a small width like most other Internet languages (Liu 2015, p.25, 27, 28).

iConji

With over 1,200 pictograms, iConji has created a platform where users can use a list of existing pictograms or create their own based on their standardized cultural norms. However, with such a big database of pictograms, iConji's approach is not entirely universal. The pictograms are designed to be read from left to right, a method not common in all languages. Also, some concepts are incorporated in rather unstandardized methods, such as the usage of a tilde to represent the act "to be." These abstracted notions create a gap of understanding that can only be stitched once the user reads the translation in their native language (Tatti 2010).

Emoji

The usage of Emoji in communication can enhance a conversation's capabilities as well as introduce creative expression within boring messages between conversational partners. However, the list of encoded emojis as introduced by the Unicode Consortium and the computer operating systems that run them are constantly being criticized for their exclusivity and lack of diversity. There is a constant need to develop more emojis that further include different nations, religions, and races, to maintain a profoundly diverse and universal language.

Blissymbolics

One of the main advantages of the Blissymbolics language is that it is used without depending on any sounds of a spoken language, making it more appropriate for people with speech or physical disabilities. However, their very extensive collection of over

5000 authorized symbols is not self-explanatory and requires some degree of a specific cultural background in addition to social and political reflection. However, Some of Bliss Symbols is still used in western context such as EU icons and symbols. Charles K. Bliss, the creator, felt that the meaning would be easy to remember once an explanation had been given (Muter 1986).

Isotype

Isotype's core feature is the concept of education, where Neurath emphasized the importance of visual education in a time where the public was not supportive of this technique. Neurath was a believer that some things were better off explained through pictures. However, he also believed that some things could not be explained through pictures alone. Understanding Isotype depended on the period when it was invented which, political, sociological and economic aspects influences the Isotype designs, for example, subjects like racism have been raised for the classification of the human with colour. However, Isotype was created as an additional or "helping language" that could support words, but it cannot stand alone (Twyman 1975).

Nobel Universal Graphical Language

When designing Nobel, there was much consideration regarding sensitive issues such as politics, race, and religion. The signs indicating male or female, black or white, conservative or liberal were designed to balance each other out to be acceptable to all kinds of people. Although much effort was put into the universal aspect of the language, some readers may find Nobel challenging to understand due to the different sign combinations for words that are represented in another fashion in Nobel (Randic 2007, p.16, 17).

Icon-Language (pictoperanto)

The existence of grammatical structures and visual grammar is what sets Icon-language apart from other pictographic languages. By combining the concept of time and the placement of the icons in a certain order, a user would be able to understand the concept being explained without doubting or misunderstanding its meaning. However, the language symbols are still largely dependent on certain gestures and orders that might not be familiar with certain people from different cultural backgrounds.

LoCoS Universal Visible Language

LoCoS is very easy to learn and has been designed to improve communication between deaf and mute, as well as for illiterate people. However, it is considered out-dated when compared to other similar pictographic languages. The existing symbols, while somewhat universal, can be misunderstood or confused for different meanings. For example, the symbol of "fish" can easily be understood as a symbol for Christianity instead of its intended meaning. While the language was an incredible effort at the time of its creation in 1964, it needs to be maintained and updated in order to keep up with the more modern interpretations that have changed throughout the years.

Earth Language

Similar to most other pictographic languages, Earth Language is designed to be read from left to right, which can be unintuitive for some people who are not used to reading in this direction. However, one of its benefits is the basis of its symbols, which is taken from nature, making it accessible to most people around the world and transcending borders of the spoken language. The symbols are simple enough to be drawn as well as indicated by sign language.

3.11 Universal facial expressions/Universal Grammar

3.11.1 Universal facial expressions

American psychologist Paul Ekman (b. 1934) is a pioneer in the study of emotion and its relation to facial expression. His research on the subject highlights the recent challenges to the universality of facial expressions of emotion. Distinguished Canadian Professor of psychology, Lisa Feldman-Barrett (b. 1963) argued in the *New York Times*, February 28, 2014, saying, "Challenges[ing] the theory, attributed to Charles Darwin, that facial movements might be evolved behaviours for expressing emotion."

Ekman explains, "Darwin never claimed in his great book *The Expression of Emotions in Man and Animals* (1872) that all facial expressions are universal, only a specific set of expressions that he had observed and studied." (Ekman 2014, online source)

Psychologist and personality theorist Silvan Tomkins (1911-1991) helped Ekman and research psychologist Carroll Izard (b. 1923), refine and add to Darwin's list of

universal facial expressions. In two separate studies conducted in the 1960s, Izard and Ekman presented to people from diverse Western and non-Western literate cultures pictures from a Darwin-Tomkins collection of expressions. The result was a strong cross-cultural agreement in the labelling of those expressions.

Ekman studied a group of people in a Stone Age culture in New Guinea who had seen few if any outsiders and no media portrayals of emotion. They recognized the same emotions when shown the Darwin-Tomkins set. The capacity for humans in radically different cultures to label facial expressions with terms from a list of emotion terms has replicated nearly 200 hundred times.

Lisa Feldman Barrett (b. 1963), Professor of Psychology at North-eastern University, questioned this method for the limitations inherent in presenting members of the various cultures a list of terms describing emotions to choose from. She suggests that individuals from radically different cultures may not agree on the interpretation on facial expressions if allowed to describe the expressions on their own terms.

Psychologist Jonathan Haidt (b. 1963) and Dacher Keltner professor of psychology at University of California, Berkeley (b. 1961) conducted a study comparing the free responses to the Darwin-Tomkins set of expressions and some other expressions. Study subjects were from rural India and the U.S. Keltner found strong evidence in the universality of expression of emotion among her test subjects, for example, there was universality in the expression of embarrassment.

Changes in brain activity and in the Autonomic Nervous System (ANS) have been documented in a large body of research that looked at physiological responses to the pictures from the Darwin-Tomkins set of facial expressions. Separate, well-replicated studies, have also shown that voluntarily generating the Darwin-Tomkins set of facial expressions produced distinct changes in ANS and brain activity. While other studies have related physiological responses to the Darwin-Tomkins set of expressions to cortisol, oxytocin, dopamine, and the cytokine response that is part of the immune system.

3.11.2 Chomsky's Universal Grammar

For American linguist, philosopher, and cognitive scientist Noam Chomsky (b. 1928),

every sentence that someone formulates can be a totally new combination of words, and so developing an inventory of responses to stimuli does not equal acquiring language. We create sentences when we speak, sentences are an infinite number of structures that contain words, which are a finite number of elements. Moreover, language is governed by a large number of rules and principles, particularly those of syntax, which determine the order of words in sentences.

In the late 1950s, Chomsky developed theories of grammar that produced the term 'generative grammar'. Generativists and the generative school focus on the study of syntax. Generative grammar is a linguistic theory that considers grammar to be a set of rules that is generating an exact combination of words in any given language that form grammatical sentences. This enables us to understand sentences we would otherwise be totally unaware of.

Even before the age of 5, children can on their own consistently produce and interpret sentences that they have never encountered before, without any prior formal instruction. Despite only a partial exposure to their language's syntactic variants, children have an incredible ability to use language. This led Chomsky to formulate his 'poverty of the stimulus' argument, which was the foundation for the new approach that he proposed in the early 1960s. According to Chomsky, children have an innate knowledge of certain principles that guide the development of their language's grammar. And that is why in his view children can easily master the complex operations of a language.

Chomsky's theory stipulates that our brains have a predisposition for certain structures of language, and this is what facilitates learning language. He theorizes that certain structural elements are common among all languages in the world. Generative linguists believe that a universal grammar is innate to humans, and embedded somewhere in the neuronal circuitry of our brains. Along with other generative linguists, Chomsky has shown that a set of syntactic rules and principles are shared by 5000 to 6000 diverse languages in the world, with very different grammars. According to this theory, this is why children can select, from all the sentences that come to their minds, only those that conform to a 'deep structure' encoded in the brain's circuits.

Universal Grammar

Universal grammar, then, consists of a set of unconscious constraints, or a mental grammar not necessarily similar for all languages; that helps to decide whether a sentence is correctly formed. Chomskyian theorists believe that there is a universal process independent of meaning by which certain sentences are perceived as correct while others are not in any given language.

The empiricist school that had dominated thinking about language since the Enlightenment; held that when children came into the world, their minds were like a blank slate. That was until the 1960s when Chomsky postulated his theory of universal grammar.

Further research in cognitive sciences utilized psychology, linguistics, computer science and philosophy to support the theory of universal grammar. For example, researchers found that babies only a few days old could distinguish the phonemes of any language and seemed to have an innate mechanism for processing the sounds of the human voice.

One example of such a situation dates back to the time of plantations and slavery in North America. On many plantations, the slaves came from many different places and so had different mother tongues. They therefore developed what are known as pidgin languages to communicate with one another. Pidgin languages are not languages in the true sense, because they employ words so chaotically—there is tremendous variation in word order, and very little grammar. But the slaves' children, though exposed to these pidgins at the age when children normally acquire their first language, were not content to merely imitate them. Instead, the children spontaneously introduced grammatical complexity into their speech, thus in the space of one generation creating new languages, known as Creoles.

In the 1990s, Chomsky attempted to establish that the brain's language faculties are the minimum faculties that could be expected, given certain external conditions that are imposed on us independently through the research that he called 'Minimalist program'. His emphasis shifted from a universal grammar embedded in the human brain, to a large number of plastic cerebral circuits. He stipulated that an infinite number of concepts are possible because of this plasticity. The brain would then

proceed to associate sounds and concepts, and the rules of grammar that we observe would in fact be only the consequences, or side effects, of the way that language works.

3.11.2.1 Criticisms of Chomsky's theories

For Chomsky, language is pre-organized within the neuronal structure of the human brain, and a particular language is formed when the external environment only shapes the contours of this network. His approach thus remains radically opposed to the behaviourist model of B. F. Skinner (1904-1990), an American psychologist, or the a Swiss psychologist Jean Piaget (1896-1980), for whom language is constructed solely through simple interaction with the environment; it is a by-product of general cognitive development based on sensorimotor interaction with the world.

Since Chomsky first advanced these theories, however, evolutionary biologists have undermined them with the proposition that it may be only the brain's general abilities that are "pre-organized". These biologists believe that to try to understand language, we must approach it not from the standpoint of syntax, but rather from that of evolution and the biological structures that have resulted from it.

Brown University cognitive scientist Philip Lieberman (b. 1934) and other authors, such as Terrence Deacon, believe that a genetically predetermined set that limits the possible characteristics of language is constituted by neural circuits and not a 'language organ'. In other words, these authors believe that our ancestors invented modes of communication that were compatible with the brain's natural abilities. And the constraints inherent in these natural abilities would then have manifested themselves in the universal structures of language.

Generative semantics is an approach that offers an alternative to Chomsky's universal, it was developed by linguist George Lakoff (b. 1941) of the University of California at Berkeley. For Chomsky, syntax is independent of such things as meaning, context, knowledge, and memory. For Lakoff however, semantics, context, and other factors can come into play in the rules that govern syntax. Lakoff also argues that metaphor, (previously viewed by other authors as a simple linguistic device), is a conceptual construct that is essential and central to the development of thought.

Chapter Four

Linguistic signs in visual communication

The visual theories that are applied in visual communication are taken from a study of the science of signs, known in Europe as semiology and in the United States as semiotics.

4.1 Signs and signifiers

Swiss professor of linguistics Ferdinand de Saussure (1857–1913), along with the American philosopher Charles Sanders Peirce (1839–1914), worked in parallel at developing a study of signs they called semiology/semiotics respectively.

The term semiotics has today become more widely used. Although Saussure and Peirce were working independently, there were a number of fundamental similarities in both of their studies. They saw the sign as central to their work. Both were primarily concerned with structural models of the sign, central to the relationship between the components of the sign. It is this relationship between the components of the sign that enables us to turn signals -- in whatever form they appear -- into a message, which we can understand. Although they used different terminologies, there are clear parallels between the two descriptions of these models.

However, there are also key differences between the studies. The most significant difference is that in his study, Saussure dismissed the role of the reader; his was an exclusively linguistic study. On the other hand, Pierce's model aptly factored in the role the reader plays; it was to a large extent one of the main components of his study.

There are three main areas that form what is understood as semiotics: the signs, the way in which they are organised into systems, and the context in which they appear. It was a group of students of Saussure that first brought his attention to this subject matter when they first proposed the principles of modern semiotics while attending a linguistics course at the University of Geneva between 1906 and 1911. Saussure's students published his work titled *Cours de Linguistique Générale* (Course in General Linguistics) in 1916, three years after Saussure's death.

Before the study of linguistics looked at semiotics, linguistic study was retrospective in the sense that it was focused on the historical usage of languages and the origin of languages in search for the source of meaning. Linguistics was merely an attempt at interpreting and explaining signs by positing them as representations of gestures,

actions, and sensations. The supposition by linguists during that time was that the nature of thought itself could be found by exploring the origins of language made possible by the ability to find meaning in language.

Linguistics then developed into a comparative study of the forms of words in different languages and their evolution. At this stage, linguists were concerned with the structure of language in its own right, with no distinct relation to the mind.

Saussure proposed an entirely new way of looking at language, by returning to the essentials and looking at language as a system of signs. If it is possible to understand how the system of language works, then this might lead to how meaning is formed.

The underlying principles of language, which are the commonality between all speakers or bearers of a particular language was central to the focus of Saussure and the structuralists. This significance of these principles lies in their invariability: they are fixed and therefore are unaffected by time, social change, or technological change. Central to Saussure's theory, which focused on language, was the model of words as signs.

4.1.1 Linguistic signs and linguistic community

We use certain sounds in a diverse number of combinations to form words, these sounds are called phonemes, they are a small set of units, which Saussure stipulated form language. These noises can only be judged as language when they attempt to communicate an idea. To do this they must be part of a system of signs.

The meaning of the individual units (the phonemes), which make up language, has been sacrificed in order to give a limitless number of meanings on a higher level as they are reassembled to form words.

In turn, these words then represent objects or, more accurately, a mental picture of objects. What Saussure outlined is a system of representation. In this system a letter, for example the letter 'd', can represent a sound. A collection of letters (a word) is used to represent an object. Each of these examples contains the two fundamental elements, which make up a sign: the signifier (the word) and the signified (the object the word represented).

The collections of phonemes that make up signifiers vary from one language to another. In English, a dog is called a 'dog', whereas in French it is '*chien*', in Spanish '*perro*', in Italian '*cane*' and in German it is '*hund*'.

Accordingly, the relationship between the signifier 'dog' and the thing signified is an entirely arbitrary one. Neither the sounds nor their written form bears any relation to the thing itself. With few exceptions, any similarity is accidental. Just as the letter 'd' bears no relation to the sound we associate with it, the word used to describe a dog bears no relation to the thing it represents. This divorce between meaning and form is called duality. American linguist William Cafe (b. 1927) said that this "Duality freed concept and symbol from each other to the extent that change could now modify one without affecting the other." (1970).

There are exceptions to this rule, but the fact that we can readily identify them as exceptions only reinforces the overriding rule that ordinary signs are constructed from arbitrary relationships. There are onomatopoeic words that in some way imitate the things they represent through the sounds they make, for example a 'bang', a 'sizzle', or a 'coo'.

Another exception is when the sequence of sounds that make up the word or signifier is constructed from two separate signs, which might describe an action or the construction of the object it represents, known as second-order signifier. For example, the word 'keyboard' describes the object used for typing words, while simultaneously being literally a keyboard that holds keys. Some types of order signifiers are language-specific. In Spanish for example, a keyboard is a *telcado*. It is through social practice that the use of a sound to represent a thing helps us to understand its meaning; the relationship between the sound and the thing it represents is learnt.

In English, the word 'key' signifies something we use to open a door, or press on to type, or something on a piano, or a salient moment or idea. Translating all of those significations into French, for example, would conjure up a diverse range of words. Therefore, the arbitrary name for an object in one language cannot be replaced by the name in another language. As Saussure asserts, language is not just a set of names chosen at random and attached to objects or ideas. Each language contains an independently existing series of arbitrary signifiers that are not related to any other

language or dialect. Some signifiers in one language cannot be directly translated into another language. There is no predetermined set of categories of ideas and objects that languages have to find names for, categories are defined by each language independently.

Saussure proposed that any language or dialect can come to be when a group of people agree that a signifier will stand for a signified, independent of other parallel agreements in other communities.

Linguistic community

The group of people making the agreement became known as a linguistic community. As long as a community remains intact, changes in language are likely to be small, and everyone can easily adopt or be aware of the changes in meaning. If the community splits then the changes will take different directions with different agreements, and eventually the members of one community will have difficulty in understanding the other.

Philosopher Ludwig Wittgenstein (1889-1925) said, "The aspects of things that are most important for us are hidden because of their simplicity and familiarity." (1970). The same principle is used in the painting *The Farm Animals* (1974) where artist Marcel Broodthaers (1924-1976) uses automobile names to label a series of cows. What this prompts the viewer to do is to search for an association between the images of the cows and the brand names of cars, thereby coming up with new signs in their mind's eye.

Three aspects make up Pierce's triangular model for the sign. Imagine if you will on one vertex sits the sign itself, another vertex sits the user of the sign, and finally on the third vertex sits the sign itself, which is the external reality, or the object (O). The sign can be a word, a sound, a picture, or a painting; there is physical evidence for the sign, which is sometimes referred to in Pierce's model as the representamen S/R. S/R is quite similar to Saussure's signifier, or Sr, however Saussure's signified (Sd) is Pierce's interpretant (I). The interpretant's meaning varies depending on the reader of the sign who forms a mental concept of the sign based on their cultural experience; it is thus not fixed, and can have multiple meanings. In accordance, the Sd or the I does not refer to the user of the sign, but to the mental concept of the sign. Emotional

responses to words will vary from person to person depending on their experience of the object. For example, the word ‘school’ may evoke a nostalgic response based on a years of being popular and excelling at sports and academics. For others, the word ‘school’ make evoke a resentful response based on being forced to conform and perform against their own abilities.

“A sign is something, which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. The sign, which it creates I call the interpretant of the first sign. The sign stands for something, its object.”(Zeman 1977, p.25)

4.2 Categories of signs

Pierce’s signs can be placed in any one of his three categories for signs:

1) Iconic: To be like, or to seem as something. Iconic signs most closely resemble the thing they represent. For example, a photograph of someone could be described as an iconic sign in that it physically resembles the thing it represents. It is also possible to have iconic words, where the sound resembles the thing it represents. Iconic language may include onomatopoeic words like 'bang' or 'woof'.

2) Indexical: Have a logical, common sense connection to the thing or idea they represent rather than a direct resemblance to the object. In this category, smoke is an index of fire, and a tail is an index of a dog. Traffic signs in the street are index signs: they have a direct link to the physical reality of where they are placed, such as at a junction or at the brow of a hill.

3) Symbolic: Symbols that have no logical representational connection between them and the things they represent; rather the connection has to be taught. Symbolic signs rely on the reader having learnt the connection between the sign and its meaning. The red cross is a symbol that we recognise to mean aid. The letters of the alphabet are symbolic signs whose meanings we have learnt.

Suassure’s signs are categorized under two groups, quite similar to those of Pierce:
1) Iconic: These are the same as Peirce's icons. They resemble the thing they represent.

2) Arbitrary: These are the same as Peirce's symbols. The relationship between the signifier and the signified is arbitrary. It functions through agreed rules. Furthermore, categories are not separate and can function together in sets. For example, a traffic sign uses traffic lights to communicate a message. The mark on the sign that resembles the lights is both an icon and a symbol. As it physically looks like the thing it represents, it can be iconic and symbol at the same time. That is to say, it is part of a set of signs for an international agreement about their meanings.

Moreover, the traffic sign's meaning is partially formed by where the sign is physically placed: the traffic sign becomes an index sign when it is placed at the road junction. Therefore, the traffic sign is an icon/symbol/index sign.

Peirce also identified three levels, or properties for signs, which can be mapped on to his triangular model. He labelled these properties firstness, secondness and thirdness.
A) Firstness – this is a sense of something. It could be described as a feeling or a mood. To say that you are feeling 'blue' could be said to function on this first level.
B) Secondness – this is the level of fact. It is the physical relation of one thing to another.
C) Thirdness – this is the mental level. It is the level of general rules, which bring the other two together in a relationship. It relates the sign to the object as a convention.
In 1903, Pierce divided the properties into three broad areas and classified them accordingly: qualities (firstness), brute facts (secondness) and law (thirdness).

Each of Peirce's original three elements of signification can be mapped against these qualities and, in turn, each of these qualities can be found within each of the elements. This generated a complex grid of sub-classification as shown above. Every sign has a representamen and so can be classified as a qualisign, a sinsign or a legisign. Every sign also has an object and can be classified as an icon, an index or a symbol and, similarly, as every sign has an interpretant it can be classified as a rheme, a dicent or an argument. All signs then become classifiable as combinations of each of their three elements. In other words, it can be one of the three types of representamen, one of the three types of object and one of the three types of interpretant.

4.3 The transfer of meaning; the act of signifying

4.3.1 Semiosis

Peirce uses the term semiosis to describe the act of the transferring of meaning, the act of signifying. What is distinct about his view of semiosis is that it is not a one-way process with a fixed meaning. It is part of an active process between the sign and the reader of the sign. It is an exchange between the two that involves some negotiation. The reader's cultural and educational background, as well as their experiences will affect the meaning of the sign and have a bearing on how it is read.

Colour, for example, is used symbolically in various ways depending on the culture. The relationship between colour and loss varies from one culture to another. In many countries, as in Western Europe for example, the colour black is a symbol of death and mourning. Funeral goers wear black as a symbol of 'mourning' and 'respect' to the family of the passing. In China on the other hand, the colour white is used for funerals, which to a Western European is happy colour, the colour of weddings; there is distinctly different understanding of the symbolic use of white.

4.3.2 Unlimited semiosis

An object is signified by a representamen, the reader views the representamen and as a result an interpretant (the mental concept) is conjured in the mind of the reader. This is a triangular process that may happen more than once from one starting point. Pierce explains that a representamen results in an interpretant in the mind. This interpretant can then become an additional sign and precipitate a chain of associations. Thereby causing the interpretant in one sequence to become the representamen in another sequence. This is a phenomenon knows as unlimited semiosis, and can cause a chain of meanings to occur so rapidly that it becomes hardly noticeable.

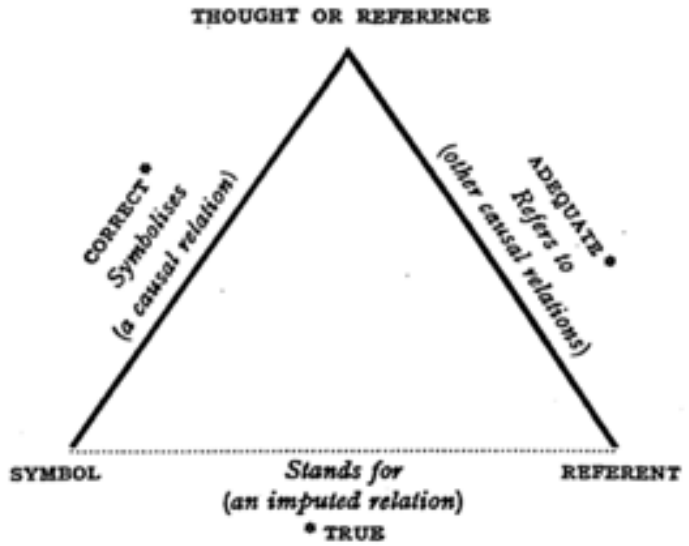


Figure 48: Unlimited Semiosis
The triangular process described by Peirce.

4.3.3 Value

Saussure said that, "Language is a system of interdependent terms in which the value of each term results solely from the simultaneous presence of the others." (1974, p.114)

For Saussure it was what he named the 'value' that determined the meaning of a sign. Saussure focused on the relationship between the sign and the other signs in the same system. According to Saussure, the value is composed of two things: A dissimilar thing that can be exchanged and a similar thing that can be compared.

Saussure has a different term for the transfer of meaning. He calls this signification. For Saussure, signification is achieved by using the mental concepts, the signifieds, to categorise reality in order to understand it. The signifieds are artificially made by society and culture. They are a part of our communication system, which is unique to our particular culture. The meaning comes not from the relationship of this sign to reality, which can be arbitrary, as he has pointed out, but from the relationship between the sign and the other signs around it. This amounts to a theory of combination and substitution that employs syntagms and paradigms according to Saussure.

4.3.4 Syntagm and paradigm

A] Syntagm: Signs organized in a linear sequence make up a syntagm. A syntagm can be a word or a sentence. The word 'tree' is a syntagm that uses a set of units, or signs:

t-r-e-e. The phrase, ‘the cat is climbing a tree’ is also a syntagm in which the signs (words) are organized in a linear sequence; each sign has a syntagmic relation to the signs before it and after it. All signs in the syntagmic sequence affect the value of the sign ‘tree’.

Imagine an outfit made of a shirt, pants, belt, socks, and shoes: that is a syntagm comprised of units. Each piece of clothing in and of itself is also a syntagm: the shirt is made up of sleeves, a collar, buttons, cuffs, etc.

B] Paradigm: A Paradigm has two basic characteristics: the first is that the units in the set have something in common, and the second is that each unit is different from the others in the set.

It is not the linear combinations alone that produce the meaning of a collection of signs (signification). For example, letter ‘A’ is part of a paradigm, called the alphabet. The letter’A’ is recognisable as part of that paradigm, whereas ‘5’ is not part of the same set as ‘A’ and therefore not part of that paradigm. Similarly, the plus sign ‘+’ is not part of the paradigm known as the alphabet.

When letters are selected from this paradigm to form words, the words are simultaneously part of another set of paradigms be it nouns or verbs. Substituting a sign, for example a ‘p’ for a ‘c’ from the alphabet paradigm in the syntagm ‘p-l-a-y’, the word ‘c-l-a-y’ is formed, thereby changing the meaning entirely.

In visual communication such as typography, it is possible to say that the font FF Din Regular is part of a paradigm that includes the entire set of weights that make up the FF Din font family and in turn this family of typefaces is part of the paradigm of sans-serifs. The way we fix one part of a garment to another is a choice made from a set of possibilities that form a tailoring paradigm. In film, the way to edit from one sequence to another is a choice made from a paradigmical set of conventions where the ‘fade’, the ‘dissolve’ and the ‘cut’ all have meanings of their own. In music, it may be the way we arrange sounds together to form melody.

4.3.5 Metaphor and metonym

In terms of the practical application of paradigmical choice, it may be easier to understand using the terms metaphor and metonym (Jakobson 1956). Where one word or image in a sequence is substituted for another, and the characteristics of one object are transferred to another.

A visual message may be imbued with certain characteristics it is not automatically associated with, so the use of metaphor in visual communication is very common. This type of metaphoric substitution can also be applied to other forms of media. This is how a metonym works except that a metonym represents a totality. It selects a piece of a certain reality to signify a larger reality in some way. For example, an image of a single dog can be used as a metonym to represent all dogs (the whole).

With all these paradigmical choices, meaning comes largely from the things that were not chosen. There is not necessarily any fixed number of options in a paradigm and each individual is likely to generate a different range of choices. It is also possible for the collection of signs in any given paradigm to change over time, where meanings of words, images and gestures change through the natural evolution of social change. The important thing to remember is that where there is choice, there is meaning.

4.4 Sign reading

> A science that studies the life of signs within society is conceivable; it would be a part of social psychology and consequently of general psychology; I shall call it semiology (from the Greek 'semeion' sign). Semiology would show what constitutes signs, what laws govern them. Since the science does not yet exist, no one can say what it would be; but it has a right to existence, a place staked out in advance. Linguistics is only a part of the general science of semiology; the laws discovered by semiology will be applicable to linguistics, and the latter will circumscribe a well-defined area within the mass of anthropological facts. (Suassure 1974, p. 16).

According to Pierce, there exists a creative process of exchange between the sign and the reader. Who is reading the sign affects the meaning of any sign, thereby varying the resulting interpretant (mental concept). Unlike Pierce's interpretant, Saussure's signified was not concerned with the relationship between the signified and the reality to which it refers. Saussure's model does not include an equivalent to Pierce's object (the reality), language is the central concern of Saussure's model; the role of the reader

does not feature in that model. However, Saussure and Pierce both acknowledge that the meaning of a word can change depending on who is reading it. Although both Pierce's interpretant and Saussure's signified have much in common.

4.4.1 Barthes

French linguist and semiotician Roland Barthes (1915-1980) was a subscriber to Saussure's ideas and developed them further. In the 1960s, Barthes further enhanced on Saussure's ideas to include the part played by the reader in the exchange between themselves and the content.

For Barthes the science of signs is concerned with much more than the construction of words and their representations. Semiotics takes in any system of signs, whatever the content or limits of the system. Images, sounds, gestures and objects are all part of systems that have semiotic meanings. In the 1960s, Barthes described complex associations of signs that form entertainment, ritual and social conventions. These may not normally be described as language systems but they are certainly systems of signification. Whereas Saussure saw linguistics as forming one part of semiotics, Barthes turned this idea upside down and suggested that semiotics, the science of signs, was in fact one part of linguistics. Barthes identified structural relationships in the components of a sign. His ideas centre on two different levels of signification: denotation and connotation.

4.4.1.1 Denotation and connotation

This first order of signification is straightforward. It refers to the physical reality of the object that is signified. In other words, a photograph of a bird represents a bird. No matter who photographs the bird and how they are photographed, in this first order of signification, they still just represent 'bird'. Even with a range of very different photographs the meanings are identical at the denotative level. In reality, we know that the use of different film, lighting or framing changes the way in which we read the image of the bird.

Differences are happening on the second level of signification, which Barthes called connotation. The reader is playing a part in this process by applying their knowledge of the systematic coding of the image. In doing this, the meaning is affected by the background of the viewer.

Connotation is arbitrary in that the meanings brought to the image are based on rules or conventions, which the reader has learned. As conventions vary from one culture to another, it then follows that the connotative effect of the conventions, the rules on how to read these images, will also vary between communities.

4.4.1.2 Convention and motivation

Convention is an agreement about how to respond to a sign. For example, viewers watching a slow-motion sequence on film intuitively know that slow-motion footage does not mean that the action is happening slowly. It is automatically understood that slow-motion in a particular context is used to enhance dramatic effect or to allow the viewers to admire the beauty or skill of the action. A lot of meaning comes from convention; signs with little convention need to be very iconic in order to communicate to a wide audience. Another way of describing this is to say that a sign with little convention needs to be highly motivated.

Motivation is used to denote how much the signifier describes the signified. A photograph, for example, is a highly motivated sign. The subject in the image is described to great detail, the subject looks like the thing or the person it represents. It is iconic. A highly motivated sign is a very iconic one. Using the complementary terms, an arbitrary sign (Saussure), or a symbolic sign (Peirce), could be described as unmotivated. However, the less a sign is motivated the more important it is that the reader has learnt the conventions that help to decode the image.

4.5 Legitimate language/official language

Sociologist and philosopher Pierre Bourdieu (1930-2002) takes cue from Saussure's observation that languages and dialects do not have natural limits, and goes on further to make assertions about legitimate language.

Bourdieu points out that the limits of language are affected by external factors as well as internal factors. The political process at play that unifies the speaking subjects and leads them to accept, in practice, the use of the official language, is one such external factor.

For this language to successfully become the official language, a general codification is necessary, one that is sustained through institutional conditions that enable it to be recognised throughout the whole jurisdiction of a certain political authority. On the

other hand a dialect, which is an unofficial language, is internally driven by its own independent logic, and has not undergone this institutional process of control.

The manner in which slang is described in dictionaries as 'unofficial' and not part of the legitimate language is an example of competition for value. Value or capital (cultural or monetary) is placed on what deviates from the most common usage. Commonplace usage is seen as trivial or vulgar. Words/signs/images that are seen as distinguished and high-minded are awarded qualifications such as capital. The production of legitimate language is therefore tied to economic production since the educational system is funded by and answerable to the state.

Bordieu (1991) said, "Obligatory on official occasions and in official places (schools, public administrations, political institutions etc.), this state language becomes the theoretical norm against which all linguistic practices are objectively measured." (p. 45).
Bordieu explains that if a language or a derivation of a language is to legitimize itself, whether a dialect of a regional or ethnic group or a specific social class, then this unofficial language has to be practically measured against the legitimate language

Unofficial languages or dialects cannot be made into legitimate/official languages unless heavily supported by external agencies. Even though the differences in these dialects/unofficial languages can be grounds from claiming superiority over another dialect. Theoretically, a hierarchical position can be determined through a system developed from these differences.

Visual publications that guide and instruct on the making of visual work have rules in place for the successful application of official visuals in various disciplines. The majority of the accepted conventions are grounded in experience and are valid observations. There are rules that have become accepted as legitimate practice and are used in education and elsewhere as the norm, against which deviation is measured. Here is one example from graphic design texts:

"Visual analogies which most clearly illustrate meaning or the spirit of a word should be sought; for example, the letter O could be the visual equivalent of the sun, a wheel, an eye." (Rand 1985, p.227)

4.5.1 Flux and hierarchy

Bordieu states that there must exist a process of continuous creation and review in order for the permanence of an official language to be maintained. This process takes place via the struggle between the different authorities within a field of specialised production. In order to ensure survival and survivability, a field must be in constant flux.

4.6 Unofficial codes/unofficial language

Saussure observed that neither languages nor dialects have natural limits. All that is needed is a set of speaking subjects who are willing to make themselves the bearers of the language or dialect. Each distinct linguistic community has its own set of semiotic symbols. What people in a linguistic community wear, how they talk, their gestures, etc. make up that particular community's dialect. It is the community that determines the spoken and/or visual language used. Because it is not an official language, it has no externally forced control. It is a practical method of communication between individuals/communities that feel marginalised by the official culture. Unofficial languages/dialects bring together like-minded people in a way that cannot be understood by those they mistrust.

4.6.1 Graffiti as visual dialect

Graffiti is a distinctly visual unofficial language that carries its own linguistic terms. It does not adhere to an institutionalized education system, and it is an extreme form of unofficial language. The most prevalent theme in graffiti writing is the displaying individual identity; writing the name or nickname of the graffiti-artist is a time-honoured practice. Historically speaking, this practice is not new: the walls of excavated buildings in Pompeii, for example, had symbols and pictures scratched alongside the names of gladiators.

Stencil graffiti carries a similar set of semiotic values. As author and graphic designer Tristan Manco points out in his book *Stencil Graffiti* (2002), that the stencilling medium is readily associated with the stencil lettering to be found on functional packaging and urban street furniture. This gives the stencil an authority and an authenticity with the added benefit of consistency.

Graffiti as an unofficial language along with its associated forms has been made use of by several commercial mainstream industries such as fashion, music, clubs, sportswear, cars, drinks, foods, events, etc. The possibilities in loading messages with these second-order signifiers (danger, subversion, dissent, authenticity, politics) has certainly not been lost on manufacturers and advertisers. Brands adopt a dialect that targets a particular group when addressing it, for example when targeting a young audience, a brand can utilize graffiti art to reach them and appeal to them. Unofficial visual language is authentic, and not costly to produce, its low-cost adds to its authenticity. However, because the context plays a vital part in the reading of the message, many of these commercial attempts appear inauthentic.

In art and design, the vernacular is presented as work that is intentionally 'undesigned', derived from work made y amateurs to create a sense of an informal/unofficial feel. Art and design employ the vernacular as a way of adding a layer of perceived authenticity and honesty to a whole range of work.

4.7 The open work of Umberto Eco

The term 'open work' comes from the book *The Open Work* (1989) written by Italian philosopher and semiotician Umberto Eco (b. 1932), first published in 1962. The term refers to the powerful concept of "openness" – the artist's decision to leave arrangements of some constituents of a work to the public or to chance, and for its striking anticipation of two major themes of contemporary literary theory: the element of multiplicity and plurality in art, and the insistence on literary response as an interactive process between reader and text. (Eco 1989, p. 288). It anticipated important developments in modern and contemporary art. Eco is interested in the relationship between the author of a work of art and the reader.

The reader, in Eco's view, plays a key role in the creative process. What the author creates by assembling and organizing a message, the reader has reassembled on their own for himself or herself to coincide with the author's original intention. The reader receives a work of art as the end product of an intended message, given of course that the reader's background affects the manner in which the message is received or reassembled.

The author may have intended a constant meaning to the message he/she has created, but each individual reader carries their own perspective, largely formed by culture, background, and experiences, when reading the message. Eco uses the term 'encyclopaedia', and not the commonly used 'code', when describing the process of transfer of meaning through signs. 'Code' in Eco's view is the direct one-to-one transfer of meaning, for example, the concise definition in a dictionary; there are no two ways about it. When there are a number of interconnected interpretations, Eco refers to that as 'encyclopaedia'. The reader negotiates their own path to meaning through a range of possibilities.

Eco suggests that a work of art is presented to an ideal reader who will derive meaning from the suggested readings of the work. An ideal reader to Eco is one who is aware of the possibilities that an artwork contains, rather than one who perfectly interprets the author's intention. Eco he is clear about stating that there is no infinite number of readings, despite the openness he sees in the reading of signs.

Eco sees art as a performance because each reader finds a new interpretation, much of Eco's writing focuses on musical performances as examples of the open work. In the visual arts there has been a shift towards a greater personal involvement on the part of the reader. Along with a greater degree of formal innovation, came a greater degree of ambiguity.

When Eco published *The Open Work*, the art world was dominated by developments such as abstract expressionism and action painting; movements that questioned the traditional views on representation and meaning. It called for the reader to work harder to find meaning.

Eco measures the correlation between the openness of a work and the amount of information the reader receives from that work using the mathematical science of information theory. Eco clearly distinguishes between the information and the meaning or message. The amount of information that a massage embodies, according to Eco, is dependent on the probability of the reader already knowing the elements of the content of the message before it is received.

Eco's mathematical formula, which is reproduced for reference, proposes that the amount of information contained in a message is inversely proportional to the probability or predictability of the message. The high unpredictability of contemporary art the Eco discusses comes from its dismissal of established semiotic conventions and rules. Eco sees contemporary art as intrinsically radical, and so although it contains much higher amounts of information, it does not necessarily contain more meaning. A far more conventional form of communication like the road sign contains more exact meaning, but far less information than contemporary art. Eco also suggests that the reader's confidence in the source of the message affects the amount of information contained in the message.

4.7.1 Openness and information

In his book *The Open Work* (1989), Eco says, "[...] the richest form of communication – richest because most open – requires a delicate balance permitting the merest order within the maximum disorder (p. 98). Eco tackles the tension between the information offered to the reader and the level of comprehension needed for the work to be interpreted.

He questions if the reader detects the intention of the author of the work: is an agreement between the two discernible?

Some types of visual communication clearly need structure and order, signs that need to be read and understood quickly due to their practical application. In situations where speed of communication is important, pictographs bridge the gap between the technical world and language. In other cases, where the practical application is less important, there are signs that merely seek to give information as opposed to meaning.

Another way of looking at these signs is to see them as seeking to deliver not a single meaning but an abundance of possible meanings. In contemporary art and design, there are many examples of work that deliberately seek to avoid what Eco calls the laws of probability that govern common language. Eco explains that this is characteristic of any visual communication with a particular message, but that also allows the reader a degree of freedom. He points out how the intention of the author may be enough to give the work a value.

Eco's open work theory in the visual arts is a guarantee of communication with added pleasure. The two things are connected together in a way not to be found in the reading of more conventional signs. Reading a road sign, whose meaning has been learnt, we read the message but rarely do we marvel at the aesthetics of the sign. Eco sees that only those with a particularly strong industrial aesthetic enjoy the effectiveness of the way a road sign is made.

4.8 Semiotic and linguistic approaches to pictographs

Semioticians analyse pictographs as modes of representation (signs), having structure (syntax), meaning (semantics), and usage (pragmatics). Like other types of language, iconic languages possess a grammatical structure. They are not generated haphazardly and are not meaningless. Philosopher and computational linguist Jean-Guy Meunier gives examples in his research paper titled *Categorial Structure of Iconic Languages* (1998), of road signs that are not rendered easy to use on their semantics alone, but also their functional structure. Meunier shows how a particular type of grammar such as algebraic or categorical grammar is heuristic in modelling the compositional structure of iconic languages. Iconic languages, according to Meunier, possess four particular traits:

[1] Operate through material carriers

[2] Have distinctive properties, or features, which become the basic constituents of the structure.

[3] Are organised according to categories, operations and rules.

[4] Are open to systematic interpretation.

Moreover, the arbitrary pictogram bears no resemblance to the physical reality (e.g. the symbol used to indicate "radioactive"). Yvonne Rogers, Professor of Interaction Design has provided a more refined description of figurative pictographs, in *Icon Design for the User Interface* (1989), classifying them as either:

[1] Similar images (e.g. landslides).

[2] Typical examples or the use of specimens to represent categories (e.g. a book to represent a library).

[3] Symbolic icons: when an image is used to represent a higher level of abstraction than the image itself (e.g. a broken wine glass to show fragility).

Similarly, in terms of the way the meaning is expressed, Professor of cognitive psychology Charles Tijus along with Professor of psychology and ergonomics Javier

Barcenilla (2002) distinguish figurative pictographs as being either:
[1] Metonymic: when one element indicates the whole (e.g. a book for library, a knife and fork for a restaurant).
[2] Metaphoric: when another object is used to express an intended meaning (e.g. a bomb for a computer bug).
[3] Categorical: when a pictogram indicates a category.

There are other dimensions such as meticulousness (the degree of detail in object drawings), dimensionality (portraying an object's depth in only two dimensions with shading, nuance of colours and perspective), and functionality (using drawing to represent a function, like for writing, one can show a pencil in isolation or a pencil with drawn lines coming from it). However, there is a major dimension concerning meaning and classifying pictographs according to categories based on semantic content, such as security instructions. Security instructions conveyed by pictographs have three functions:
[1] To describe a situation: the image identifies the risk.
[2] To prescribe an action: the image describes the action to be carried out.
[3] To prohibit an action: the image shows the prohibited action. (Easterby and Hakiel 2007, p 28).

Tijus and colleagues (2001) showed that pictogram semantics can be described according to a limited set of basic categories organised hierarchically, right from the portrayal of an object.

4.8.1 Creating pictogram taxonomy and ontologies

The creation of taxonomy (a classification) for a given set of pictographs can be useful in increasing users' ability to learn them. The creation of pictogram taxonomies makes it possible to illustrate how a signaletic system can solve the problem of representing classes and types of actions to perform. In addition to taxonomies, it is possible to construct pictogram ontologies, or hierarchical organizations of knowledge based on the components of pictographs. In order to carry out such ontologies, it is necessary to break up pictographs into their components and to compile an inventory of all the basic elements used to create pictographs.

4.8.2 Cognitive approach to pictographs

Vezin (1984) has provided a number of arguments promoting the pictogram as a powerful tool for the cognitive system include:

[1] The pictogram reduces mnemonic load and thus allows cognitive saving.

[2] Its' descriptive nature provides high quality pictorial representation, which facilitates memorization.

[3] Since a pictogram can be used to represent a category, it can provide broad information exceeding the specific items it portrays. (Vezin 1984, 75).

The pictogram also benefits from the efficiency of visual imagery:

[1] Identification is more precise from a single glance, at a greater distance, and at a greater speed than with words (Collins and Lerner 1982; Lehto 1992). An image is processed in parallel and therefore more rapidly than words, which require serial processing.

[2] Higher resistance to cognitive interference (King 1975; Santa 1977): an image, memorized and recalled as a single unit, would resist interference better than a text made up of several parts.

[3] Images are perceived better in suboptimal conditions (Ells and Dewar 1979).

[4] A pictogram can also be better stored in memory due to dual encoding, that is both visual and symbolic (Paivio 1986), this engenders a deeper level of processing and greater consolidation in memory. For instance, authors Ralph Haber and Barry Myers (1982), who were interested in the storage of pictographs in memory, found that recognition accuracy was greatest for pictographs and poorest for words. Although participants were able to disregard shape within pictographs, they were most accurate when presented with the same shapes as those used in the original trials.

But across all conditions, participants were most accurate when forced to recall both the shape and the content. These and other results were taken to be mildly supportive of a dual encoding hypothesis. However, an image's cognitive effect needs to be distinguished from its relationship with function. It is argued that semantic distance, rather than concreteness, should be the main determinant of comprehensibility and performance (McDougall 2001, p157). Although representations of real-world items, through icons, may help users in their initial encounters with pictographs, forming strong systematic relationships between icons and functions should be more important.

Chapter Five

Trans-Culturalism and Posthumanism

5.1 Transculturalism/Multiculturalism

5.1.1 From culturalism to transculturalism

To derive a definition of 'culture', one must draw on anthropological and structural linguistic roots. There are also a post-structural and postmodern lexica to account for when forming a current understanding of 'culture'. Modes of meaning-making are what fundamentally form culture. To understand culture, one must grasp the following three notions:

Culture is an assemblage of imaginings and meanings: Humans form a culture in order to communicate and create community; these are assemblages of people, while culture is an assemblage of imaginings and meanings. These imaginings are somehow represented through concepts applied to meaning systems such as discourse, language, symbols, signs, and texts. The system into which meanings are formed are not absolute or immutable. Time, space, and human action can affect or dismantle these imaginings and meanings, and thus they are never fixed. Because meanings are formed for a particular purpose in a particular historical and material context, they are subject to the return of imagining and vice versa. Imaginings and meanings are not stable, sustaining formations, they can at any time substantiate or undermine one another. Some critics of cultural imaginings point out that it lacks a certain empirical solidity. The notion of imaginings and its role in identity formation, and the wider shaping of human realities have never been cooperatively addressed by empirical and social theory.

Culture is an assemblage of imaginings and meanings that may be consonant, disjunctive, overlapping, contentious, continuous, or discontinuous. Meaning systems like language are capable of producing misunderstandings, non-meaning as well as meanings, despite being treated by sociologists as a fixed and orderly system. Culture is not a fixed imagining; competing interests, different individuals and different groups keep culture in constant transition and transformation, making it open and unstable. Meanings can be amplified and directed one way or another by culturally dominant meaning or ideology.

Culture is an assemblage of imaginings and meanings that may be consonant, disjunctive, overlapping, contentious, continuous, or discontinuous. These assemblages may operate through a wide variety of human social groupings and social practices.

A wide variety of human social groupings and social practices can form 'cultures' such as a family culture, a national culture, a work culture, a university culture, a gay culture, a technological culture, and so on. Large and historically enduring institutions like government, the 'family', or media corporations that demonstrate (more or less) consistent ideological, semiotic, ethical, aesthetic, and organizational attributes, result in the forming of certain cultures around them. Members as well as non-members of these cultures are subject to the cultural meanings that they produce.

As an individual, one may partake in a number of various cultures at once. The norms, values, beliefs, political ideals, rituals, clothing styles, vocabulary, and so on of each culture and individual participates in may be different. Various levels of dominant values of a culture form the various dimensions of the culture's meaning system. (Lewis 2002, p.15).

Cultural theorist Richard Johnson's notion of culturalism sought to describe a certain theoretical coherence amongst the Birmingham cultural analysts and their followers. Culturalists, according to Johnson, believe that an analysis of the textual production and documented practices of a social group can reveal the group's behavioural and social patterns

Scholars seeking a compelling illustration of human behaviours, aesthetics, and ideas are served well by this centralization of the concept of culture. Johnson's concept of culturalism fails to adequately appreciate the complex nature of culture and the broad problematics of meaning-making. Culturalism only partially acknowledges the relationships between meaning and non-meaning, ideology and subjectivity, social reform, and social imagining.

5.1.2 Transculturalism

Cuban anthropologist Fernando Oritz (1881-1969) coined the term 'Transculturation' which is used to describe the phenomenon of merging and converging cultures.

Transculturation, merges the concepts of acculturation (acquiring another culture), deculturation (loosing or uprooting a previous culture), cultural transition, and neoculturation (creation of a new culture). (Oritz 1995, p. 102-103). Ethnicity and

ethnic issues are sometimes impacted by one or more aspects of transculturation; when that occurs, it is referred to as 'ethnoconvergence'.

In one general sense, transculturation may occur as a result of war, ethnic conflict, racism, multiculturalism, cross-culturalism, interracial marriage, and a number of other possible contexts that deal with more than one culture. In the other general sense, transculturation is one aspect of global phenomena and human events.

Transculturalism can be described as follows: Transculturalism is not about creating cultural harmony or combating disaccord and instability to create a "multicultural" community. The terms 'Multicultural' and 'Transcultural' have been erroneously loosely interchanged in many popular discourses. Transculturalism deals more directly with the problematics of contemporary culture, most particularly in terms of relationships, meaning-making, and power formation. Transculturalism seeks to shed light on the various dimensions of culture and the ways in which social groups "create" and "distribute" their meanings, as well as the ways in which social groups interact and experience tension.

> Transculturalism looks in particular toward the ways in which language wars are historically shaped and conducted. These language wars create the conditions of stability and instability as individuals and groups congregate, communicate, and seek to assert their material and semiotic interests over others. Culture is formed in and around "language wars" which operate through all social levels and which may be more or less severe in terms of semiotic, personal, and material outcomes. Language wars are an inevitable part of human engagement; they are constituted through what Stuart Hall calls the "struggle to signify." Individuals and social groups engage in language wars as they attempt to communicate, form community, maximize personal gratifications, or create boundaries. In other words, language strategies may be deployed in order to constitute personal or social assemblages; they may also be used as a direct assault against other individuals and assemblages in order to manage, control, or destroy them. (Lewis 2002, p. 24).

Wide fields of debate surrounding globalization and internationalization benefit from an engagement with transculturalism, which identifies these processes in terms of a broadly contested and uneven distributions, disjuncture, and concentrations.

5.1.2.1 Transculturalism versus multiculturalism

The theory of multiculturalism might be a vague one; it generally deals with the foundations of a culture, and not the practice, which encompasses cultural ideas. (Harrison 1984)

Human understanding and respect for the 'other' is an age-old matter based on cultural, religious, racial, and other seemingly obvious differences in appearance and/or lifestyle. This otherness, or 'alterity', has long been combated by legislation and social as well as cultural awareness. However, coming to terms with the other/otherness remains to be quite elusive in an age where racism, fear, ignorance and stereotypes are still perpetuated in social and political discourse. Such concepts must be destroyed to ensure a safe and efficient progression of the human experience.

It follows that transculturalism is defined as, "Seeing oneself in the other" (Cuccioletta 2002, p. 1) and the transcultural is extending through all human cultures.

A multiculturalist would suggest that if humans rise above their cultural and nationalist identities, a collective human experience can be achieved, and is indeed the ideal. This works towards a larger vision of the global community.

In a multicultural state, the human collective is a comprehensive experience whereby individual cultural identities represent a larger body of individuals. This notion is also referred to as international, intercultural, and cross-cultural. All of these terms vary slightly in descriptive value, but are loosely synonymous with one another.

Multiculturalism is an attractive notion that suggests a state of a broad collective experience of humans whose identities and loyalties transcend boundaries of nationalism and are committed to a larger vision of the global community.

Various descriptions and metaphors are used in reference to a single notion: international, intercultural, cross-cultural, transcultural, multicultural…etc., which all imply a state where a large body of individuals is represented by individual cultural identities that encompass different patterns and multiple realities. These terminologies have varying degrees of explanatory or descriptive utility. (Nawar, Samir 2011, p. 199).

5.1.3 Cultural identities

Cultural identity is an individual thumbprint, each unique in its own design. It is formed through a socialization process and the social influence of family, education, and mass media. It is how individuals and groups see themselves, and it is a key symbol of individual existence. Lebanese novelist and culture pundit Amin Maalouf defines the elements of identity as follows:

> Each individual's identity is made up of a number of elements, and these are clearly not restricted to the particulars set down in official records. Of course, for the great majority these factors include allegiance to a religious tradition; to a nationality sometimes two; to a profession, an institution, or a particular social milieu. But the list is much longer than that; it is virtually unlimited. A person may feel a more or less a strong attachment to a province, a village, a neighbourhood, a clan, a professional team or one connected with a sport, a group of friends, a union, a company, a parish, a community of people with the same passion, the same sexual preferences, the same physical handicaps, or who have a deal with the same kind of pollution or other nuisance. (Maalouf 2000, p. 10).

Cultural identity is a synthesis of continuously shifting, some times contradicting, elements like sense of belonging, and loyalty. It is not inert nor is it inflexible; it is a dynamic evolvement that is shaped and reshaped throughout one's lifetime. Maalouf emphasises this further when he states,

> Up till now I have stressed the fact that identity is made up of a number of allegiances. But it is just as necessary to emphasise that identity is also singular, something that we experience as a complete whole. A person's identity is not an assemblage of separate affiliations, nor a kind of loose patchwork; it is like a pattern drawn on a tightly structured parchment. (Maalouf 2000, p. 26).

It is a common hypothesis that the investigation of cultural identity should include three interrelated levels of integration and analysis.

1- Inherited symbols and images that signify one's interpretations of sanctions and rewards, totems and taboos, prohibitions and myths.

2- The unity and integration of society and nature as they reflect in the total self-image and in the day-to-day awareness and consciousness of one's self.

3- The larger dynamics of understanding, accepting, and embracing a universal culture, based on and reflected by one's openness or pre-set opinions of the other – the universal human. (Nawar, Samir 2011, p. 200).

Thus, the boundary of cultural identity plays a large part in determining one's ability to relate to other cultural systems. While balancing two imperatives: the desire to preserve one's original identity and the need to be able to communicate with the other at all times and as freely as possible. As German-American theologian and existentialist philosopher Paul Tillich (1886-1965) suggests,

> To live on the edge of one's thinking, one's culture, or one's ego, is to live with tension and movement. It is in truth not standing still, but rather a crossing and return, a repetition of return and crossing, back-and-forth -- the aim of which is to create a third area beyond the bounded territories, an area where one can stand for a time without being enclosed in something tightly bounded. (Tillich 1990, p. 163).

We all have our individual cultural thumbprint. Yet, the conditions of contemporary history imply that we may be witnessing the emergence of a new kind of person, one whose social and psychological constitution is a product of the interweaving and blending of cultures in the twentieth century. This person is described as 'The Multicultural Person'.

A multicultural person's identity is far from being frozen in a social character, and is more fluid and mobile, more open to variation, and more versatile and adaptable to change.

He/she is usually committed to the essential similarities between people, while paradoxically maintaining an equally strong commitment to differences. In other words he/she is neither totally a part of nor totally apart from his/her culture; instead, he/she sort of lives on the boundary, or the verge of multiculturalism. Fulfilling the "moral code" suggested by Maalouf when describing the "common civilization".

5.1.4 Trans/multicultural cities (place) as palimpsests

All places are palimpsests. Among other things, places are layers of brick, steel, concrete, memory, history, and legend (Whittlesey 1929; Donald 1997).

Palimpsest comes from the Latin *palimpsēstus*, originally compounded from the Ancient Greek *palin*, "again" and *psao*, "I scrape", literally meaning, "scraped clean and used again". Several disciplines have integrated the word, most notably

architectural archaeology, since the Romans used it to describe the wax-coated tablets that could be smoothed and reused for writing.

The countless layers of any place come together in specific times and spaces and have bearing on the cultural, economic, and political characteristics, interpretations, and meanings of place. (c.f. Crang 1996; Schein 1997; Cosgrove 1998; Duncan & Duncan 2003; Samuelson 2008). Architects, archaeologists and design historians sometimes use the word literally to describe the accumulated iterations of a design or a site that has layers of archaeological remains, or figuratively to describe the accumulation and reinforcement of design ideas over time.

More recently the word has been used by authors, artists, poets, photographers and geographers to describe the multitude of present and past discursive and physical layers that are used by people to interpret place. (c.f. Sizemore 1984; Bradshaw & Williams 1999; Huk 2000; Basu 2002; Marsh 2003; Mohr 2003; Lutz 2004; Alexander 2007; Mitin 2007).

When a building or structure is demolished, evidence of its former shape, or of the existence of it as a space can be seen in the tarred rooflines that remain on the side of its neighbouring building. There always remains some form of visual evidence of the former shape of a space that has been rebuilt or re-imagined, even if temporarily.

Yet, as many commentators have noted, places are increasingly shaped and defined by factors that are not only distant in time, but also in space. Advances in information and communication technologies (ICTs) and transportation technologies have intensified the ability of non-proximate forces to have bearing on the here and now of any given space/time moment. (c.f. Adams 1995; Kitchin 1998; Dodge & Kitchin 2001; Brunn et al. 2004; Massey 2005; Graham 2008)

5.1.5 Selected Urban palimpsests in dystopian posthuman conditions (film and literature)

In contemporary post-apocalyptic stories, the setting is often an agrarian, non-technological future world, or a world where only scattered elements of technology remain. This may coincide with, but is not defined as, dystopian fiction. There is a

considerable degree of blurring between post-apocalyptic science fiction and dystopian fiction.

Contemporary social discourse about society, the environment, politics, religion, psychology, spirituality, or technology is often perpetuated in the fiction of dystopian societies. Fears about these or any number of issues currently facing humanity in the "real" world are often central issues in the broad series of sub-genres of fiction that depict dystopian societies. Speculation about the future of humanity has led to a multitude of imaginings of dystopias. Societal corrosion, poverty as a global pandemic, violent political oppression or totalitarianism; these are all prevalent themes in dystopian fiction. The impact of these ideas on architecture and the built environment is central to modern urban dystopias whereby a thorough examination of the correlation between the imagined urban spaces of dystopian societies and the real (dis) representation of the modern city occurs.

Films depicting modern urban dystopias often project futuristic cities as a megalopolis, thus providing commentary on trends in urban design in the contemporary world.

5.1.5.1 *Children of Men*

Children of Men is a 2006 dystopian science fiction film co-written, co-edited and directed by Alfonso Cuarón and based loosely on P. D. James's 1992 novel *The Children of Men*. It is set in 2027, where two decades of human infertility have left society on the brink of extinction and collapse. Illegal immigrants seek sanctuary in the United Kingdom, where the last functioning government imposes oppressive immigration laws on refugees.

Film sets are designed to look like near-future versions of today. In Cuarón's estimation, all technological progress would have ceased once the implications of the crisis had fully hit, hence all cars, structures, weapons and gadgets were only slightly altered, or used sans modification. So while the billboards, newspapers and signs were all updated and carried messages appropriate for the period, cars, guns and other assorted background pieces look entirely familiar.

Figure 49: The dystopian world of *Children of Men*

To convey a dystopic sense of the future urban society, dark muted colours paint a drab and lifeless picture in a city devoid of hope. This hopelessness is represented in the apparent lack of interest in 'beautifying' spatial surroundings. In one shot, a palimpsest of a fading outdoor advertisement for a beach holiday that reads "Tranquil," and depicts an illustration of a woman on a beach contrasts with the violent and chaotic reality. To portray a cataclysmic mood, continuous action shots were utilized to convey a sense of urgency and chaos, and the massive implications of crisis on the community as a whole. The scope of the story mirrored the shooting techniques used: both big and far-reaching.

Working from the position that *Children of Men* was the "anti-*Blade Runner*," (Cuarón 2007, online interview) Cuarón rejected all proposals made by his art department that centred on technological advancement, choosing instead to downplay the science fiction elements of the 2027 setting. His vision for the social reconstruction of *Children of Men* was modelled after the film *The Battle of Algiers* (1966), which Cuarón presented to Clive Owen as an example of his vision. Cuarón also researched literature by philosopher and cultural critic Slavoj Žižek to develop a philosophical and social framework for the film.

Realism was conveyed through the director's choice to have innovative technology in the film's timeline discontinued by 2014, making the set and props more 'real' as they formed images that reflected the contemporary period. Cuarón took the audience to a not-so-foreign future that was deeply rooted in the present, "We didn't want to be distracted by the future. We didn't want to transport the audience into another reality." (Mike C. 2012, online source).

In his critique of Cuarón's *Children of Men,* Žižek offers a philosophical view of the film's central themes:

> I think that the true infertility is the very lack of meaningful historical experience. It's a society of pure meaningless historical experience. Today ideology is no longer big causes such as socialism, equality, justice, [and] democracy. The basic injunction is 'have a good time' or to put it in more spiritualist terms 'realize yourself'. (Žižek 2006, online source).

Žižek further discusses subjects including the foreground/background dynamics of the film, infertility and politics.

> The true focus of the film is there in the background, and it's crucial to leave it as a background. It's the paradox of what I would call an a-morphosis - if you look at the thing too directly, the oppressive social dimension, you don't see it. You can see it in an oblique way only if it remains in the background. (Žižek 2006, online source).

Figure 50: Graffiti writings from the film *Children of Men*

5.1.5.2 *Blade Runner*

In the 2019 dystopian future of *Blade Runner* (1982), adapted from Philip K. Dick's *Do Androids Dream of Electric Sheep?*, manufactured beings called "replicants" are slaves used on space colonies and are legal prey on Earth to various bounty hunters who "retire" (kill) them. The film, however, falls more strictly within the cyberpunk genre than the novel does.

Canadian-American fiction novelist William Gibson (b. 1948) (often referred to as the father of cyberpunk), would later reveal that upon first viewing the film, he was

surprised at how the look of *Blade Runner* matched his vision for *Neuromancer* (1984). The genre of cyberpunk movies has been heavily influenced by the mood and tone of the *Blade Runner* film.

The retro-themed future of *Blade Runner* aptly represents a tension between past, present and future. The film refers to the past to explore the implications of technology on the environment and on the society of the future by using literature, religious symbolism, and classical dramatic themes. Often described as a *film noir*, the world of *Blade Runner* is high-tech and gleaming in places but decayed and old in others.

Figure 51: The retrofit city of *Blade Runner*

Blade Runner explores dystopian themes that coincide with the cyberpunk concepts of breaking the barrier between the organic and the artificial, and integrating high-tech with pop culture, mainstream and underground. *Blade Runner* is one of the earliest examples of the expansion of cyberpunk themes into film. Reality and our accurate perception of it, as well as our ability to faithfully remember it, are examined through the recurring motif of eyes and manipulated images. (c.f. Saini 1996, McCoy 1995).

5.1.5.3 *Elysium*

"Everybody wants to ask me lately about my predictions for the future. No, no, no. This isn't science fiction. This is today. This is now." Neill Blomkamp (2013).

Elysium is a 2013 dystopian science fiction action film written, directed, and co-produced by Neill Blomkamp (b. 1979). The film takes place on both a ravaged Earth, and a luxurious space habitat called Elysium. It explores political and sociological themes such as immigration, overpopulation, health care, exploitation, the justice system, and social class issues.

It is the year 2154; humans on Earth live in extreme overpopulation, pollution, and poverty. Humanity is plagued with starvation, and have little to no technology and medical care. Elysium is a highly advanced terra-form space habitat orbiting Earth. It is where the rich and powerful live a technologically advanced life with Med-Bays (medical machines that can cure all diseases, reverse the aging process and regenerate new body parts), clean air, vegetation, etc. Earth citizens want the medical technology on Elysium to cure their loved ones, and so, a struggle between the two worlds ensues. To portray a dystopian Earth, rundown and dismal, the Earth scenes for the film were shot in a dump in the poor Iztapalapa district on the outskirts of Mexico City. Not far from there, in a wealthy Mexico City suburb called *Huixquilucan-Interlomas,* and in Vancouver, the Elysium scenes were shot.

Figure 52: Utopia and Dystopia of *Elysium*

The film's Art Director, Philip Ivey (b. 1969) studied older science fiction films for an extended period of time when working on the futuristic designs for the film. One of his most substantial influences on this project was "visual futurist" and a neofuturistic

concept artist Syd Mead (b. 1933).

Blomkapm's trans-humanist paradise, Elysium, is a representation of our current 'First World'. While the slums of his 2154 Earth, and its immigrants desperate to make it into Elysium for a chance at a better life for themselves and their families are the 'Third World'.

Figure 53: Dystopian house example and the streets of *Elysium*

Blomkamp strongly believes that humanity is headed towards a dystopia much like the one his film portrays, "The dice are going to be rolled, and either we're going to end up coming out of this through technological innovation, or we're going to go down the road of a Malthusian catastrophe." (Blomkamp 2013, online source).

Blomkamp is of the strong conviction that the world will eventually divide into two groups: the technologically empowered rich, who will be isolated, and the poverty-stricken masses living on the edges and in the slums of the first group's trans-human habitats; a view that coincides directly with the transhumanist and singularitatrian lines of thinking.

5.1.5.4 Cyberpunk

The setting of a cyberpunk future is usually post-industrial dystopias that are characterized by cultural mayhem in which the key players are adaptive hackers, artificial intelligences, and mega-corporations. Cyberpunk dystopias are set in near-future Earth as opposed to science-fictional settings. The Cyberpunk genre of film echoes the atmosphere of *film noir*.

Classic cyberpunk characters are marginalized, alienated loners who lived on the edge of society in generally dystopic futures where daily life was impacted by rapid technological change, an ubiquitous datasphere of computerized information, and invasive modification of the human body. (Person 1998, online source).

5.2 Transhumanism/Posthumanism

Although technological advancement is central to contemporary articulations of posthumanity, however, the literature on posthumanism is not exclusively found within philosophical inquiries into technology. Moreover, posthumanism is not necessarily an issue of human enhancement or the advocacy of enhancement freedoms. In fact, the history of posthumanism is not synonymous with the history of technology.

The term 'posthuman' implies a future human in a state of *after* humanity that is most likely leaps and bounds ahead of the present-day human. There is however, a wide scope of literatures and biopolitical disciplines that have contributed to shaping concerns about the future of humanity. These have resulted in vastly diverse views on the history of posthumanism.

The human species is hurling into a new phase in its history via the accelerated pace of technological development and scientific understanding. Newly developed cognitive tools that combine artificial intelligence with interface technology make the prospect of artificial intelligence in the near future a very real one. "We need first to understand that the human form […] may be changing radically, and thus must be re-visioned. We need to understand that five hundred years of humanism may be coming to an end, as humanism transforms itself into something that we must helplessly call posthumanism" (Hassan 1977, p. 212).

The term ‘transhumanism’ also implies an enhancement of human capability through technological advancement, and so it is a term loosely used as a synonym for ‘posthumanism’. Both concepts promote the idea of working toward an evolutionary posthuman future.

Artist, theorist and media designer Natasha Vita-More (b. 1950), founder of the Transhumanist Arts and Culture World Center and one of the pioneers of the transhumanist movement, has argued that human success is reliant on conquering the challenge of enhancing its condition and surviving. Her theory suggests that human ingenuity is intrinsic to human nature, problem solving through innovative methods of design is built into human ambition. Vita-More’s theory employs Conceptual Art at its core and includes, but is not limited to, biotechnology, robotics, information technology, nanotechnology, neuroscience, cognitive science, and artificial general intelligence.

Transhumanism, abbreviated as H+ or h+, is an international intellectual and cultural movement that affirms the possibility and desirability of fundamentally transforming the human condition by developing and making widely available technologies to eliminate aging and to greatly enhance human intellectual, physical, and psychological capacities. (Mercer, Trothen 2014, p. 218).

Inherent in the term ‘posthuman’ is the act of being/having been a human, whether in the individual sense or the collective sense, in one’s own lifetime or in the lifetimes of some or all of one’s direct ancestors, as opposed to other hypothetical non-humans. Only what is or what was once human can evolve into posthuman. It is a growth or an expansion rather than a complete transformation. “Therefore, a prerequisite for becoming a posthuman is having been a transhuman, the point at which the human being begins surpassing his or her own limitations but is still recognizable as a human person or similar” (Bostrom 2003, p. 19).

In its contemporary usage, ‘transhuman’ refers to an intermediary form between the human and posthuman. We may possible be living in a state of transhumanism today given that the current advancements in medicine and information technology have empowered us in a manner unimagined by humans living in ancient times.

Shaping the understanding of transhumanism

There have been a few influencial literary works in the sphere of transhuman exploration. *Great Mambo Chicken and the Transhuman Condition* (1990), written by philosopher and author Ed Regis (b. 1944). Regis's book approaches the topic of transhumanism along with the field's hubristic scientists and philosophers in a humorous manner. Roboticist Hans Moravec's (b. 1948),*Mind Children* (1988) about the future development of machine intelligence had a seminal impact on the field. Presenting ideas similar to those of Moravec was computer scientist and futurist Ray Kurzweil (b. 1948) who wrote *Age of Spiritual Machines* (1999).

Mathematical physicist and cosmologist Frank Tipler' s (b. 1947) *Physics of Immortality* (1994), inspired by the writings of French philosopher and Jesuit priest Pierre Teilhard de Chardin (1881-1955), argued that advanced civilizations might come to have a shaping influence on the future evolution of the cosmos. Many of Tipler's critics argued against his attempt at blending science with religion. Many science advocates, such as Carl Sagan, Richard Dawkins, Steven Pinker, and Douglas Hofstadter, have also helped shape public understanding of transhumanist ideas.

In 1988, the first issue of the *Extropy Magazine* was published by Max More and Tom Morrow, and in 1992 they founded the Extropy Institute. The term 'extropy' was coined as the informal opposite of 'entropy'. The idea was to create a space where disparate groups of people with futuristic ideas can come together and engage in a dialogue and exchange of ideas. More wrote the first definition of transhumanism in its modern sense, and generated his own brand of transhumanism, which he dubbed 'extropianism'. Extropianism advocated individualism, dynamic optimism, and the market mechanism in addition to technology.

5.2.1 Cultural posthumanism

The idea of creating intelligent artificial beings, proposed by Hans Moravec (1998), has influenced transhumanism. Moravec's ideas on transhumanism have also been characterised as a 'complacent' or an 'apocalyptic' variant of posthumanism, by cultural critic Dr. Neil Badmington who also contrasted Moravec's ideas with 'cultural posthumanism' in humanities and the arts. His work explains how posthumanist interventions are a critical, "Working-through of humanist discourses." (Badmington 2003, p. 22).

During the post-war era, transhumanist ideas were addressed and dissected mainly in the literary genre of science fiction. At the time, optimistic futurists had a tendency of focusing their attention on technological progress, space travel, medicine and computers. Several authors explored various aspects of transhumanism through their work, and thus contributed to the proliferation of transhumanist ideas. Examples are authors such as Arthur C. Clarke (1917-2008), Isaac Asimov (1920-1992), Robert Heinlein (1907-1988), Stanislaw Lem (1921-2006), and later Bruce Sterling (b. 1954), Greg Egan (b. 1961), and Vernor Vinge (b. 1944).

Judith M. Halberstam (ed.) and Ira Livingstone's (ed.) book *Posthuman Bodies* (1995) explains the origins of the term 'cultural posthumanism'. . The posthuman discussed within the book refers not to 'some subsequent development state' of humanity, but its 'collapses into sub-, inter-, trans-, pre-, anti-' (viii). In the book, the authors explore the posthuman idea that there is no coherence to being human and, perhaps, no basis on which to appeal to the idea of a human essence or a common form of human dignity in an attempt to address challenges to 'the coherence of the human body'. The book editors posit that "posthuman bodies are the causes and effects of postmodern relations of power and pleasure, virtuality and reality, sex and its consequences." (Halberstam and Livingstone 1995, p. 3). Halberstam and Livingstone also reiterate that, "The posthuman does not necessitate the obsolescence of the human; it does not represent an evolution or devolution of the human. Rather it participates in re-distributions of difference and identity." (*Ibid*, p. 10).

While such a 'cultural posthumanism' would offer resources for rethinking the relations between humans and (increasingly sophisticated) machines, transhumanism and similar posthumanisms are, in this view, not abandoning obsolete concepts of the "autonomous liberal subject," but are expanding its "prerogatives" into the realm of the posthuman explained by postmodern literary critic N. Katherine Hayles (1999).

While authors such as Moravec discuss the propect of brain downloads onto computers, in her defining text in her book *How We Became Posthuman* (1999), Hayles (b. 1943) discusses the repercussions of using digital technology to translate bodies into information or non-matter.

Hayles's posthumanism draws from Arab American literary theorist Ihab Habib Hassan (1925-2015) who like Foucault, suggests that the end of the era of Man is fast approaching.

Sociologist and theologian Elaine Graham (2002a) agrees with Hayles's view, which draws on narratives from within literature to study Otherness as it is manifested within culture. Graham's posthumanism is constituted by studies of the "Interplay between the world of scientific, bioethical theorizing and the world of the cultural imagination – myth science fiction, popular culture and religion." (Graham 2002b)

What differentiates humans from non-humans? What does it mean to be human? These questions and more are raised through stories of automata, cyborgs, and robots. To this extent, they should be construed as integral parts of posthumanism's history.

5.2.2 Posthuman communication

"The lane to the land of the dead. … I am the dead, and their land." — The character Neuromancer, *Neuromancer* (Gibson 1984, p. 243–244)

"There will be no distinction, post-Singularity, between humans and machines or between physical and virtual reality." (Kurzweil 2005, p. 9)

Arthur C. Clark's ideal of a transcendent entity is futuristically illustrated in his book *Childhood's End* (1987) wherein human-like forms merge together and, while losing their human form, becoming a collective mind. Media historian and social theorist John Durham Peters (b. 1958) says of posthumans that they "are unhindered by distance, are exempt from the supposed limitations of embodiment, and effortlessly couple the psychical and the physical, the signified and the signifier, the divine and the human. They are pure bodies of meaning" (Peters 1999, p. 75)

Communication has the ability to extend human interaction across space and time, and essentially transcend human form; therein lays its power.. In combining the philosophical, moral and political, the key questions for communication theory is how wide and deep can our empathy for otherness reach, how ready are we to see "the human as precisely what is different." (*Ibid*, p. 227–230)

5.2.2.1 Posthumanism in science fiction-based reality

In science fiction literature, the transformation of humans into posthuman life forms is often still based on "scientific theories". For example, science fiction author Thomas Disch (1940-2008) notes a subtle Darwinian theme cutting through many of our most famous fictional, science based texts.

"The agenda that [H.G.] Wells advanced in [his] novels—*The Time Machine, The Island of Doctor Moreau, The War of the Worlds* and *The First Men on the Moon*—was Darwin's theory of evolution as applied to human history," writes Disch. (1998, p. 62).

Wells saw humanity at a midpoint in evolution, somewhere up from the lowly apes but still somewhere down from the ethereal angels. In *The First Men on the Moon*, Wells's moon-dwellers, the Selenites, were his portrayal of the next evolutionary form of humanity. The Selenites prophesized the computer intelligences that are common in today's science fiction: they were evolved beings that were pure brains who no longer needed to perform most bodily functions. Subsequent selenite-like characters are the malevolent HAL in Arthur Clark's novel and Stanley Kubrick's film *2001: A Space Odyssey*, and the virtual person Agent Smith in *The Matrix*, whose telling quote to Morpheus sees posthuman beings as superior to humans, "You are the disease; we are the cure."

Artificial intelligence may be the pathway humans must take on their journey to disembodiment if this, pure brain with no body, is the next evolutionary advance in human history. This form of being was best imagined by Gibson in his classic novel *Neuromancer.*

The first instalment in his *Sprawl* trilogy, *Neuromancer*, first published in 1984, is considered to have heralded the genre of cyberpunk, and was the first novel to win the "triple crown" of science fiction—The Hugo, The Nebula, and the Philip K. Dick Awards (McCaffery 1991, pp. 263–285). The book gave birth to an entire vocabulary of terms for the computer aficionados and would-be hackers of today (Cheng 2007, p. 21).

The book has been studied from various critical vantage points. Its' Drawinian subtext was explored by critical media theorist Thomas S. Frentz through Gibson's illustration of the evolution of humanity through the artificial intelligences (AIs), Wintermute and Neuromancer.

In the storyline, Wintermute and his team embark on a mission to help him merge with his twin AI, Neuromancer. Turing Law Code, an agency charged with preventing any AI from expanding its intelligence, has programmed built-in defences against such a merger. The team works to bypass these defences.

It was noted by academic, critic and novelist Adam Roberts (b.1965) that *Neuromancer* revels in obscuring the boundaries between humans and machines. One example is the deceased McCoy Pauley whose personality is preserved as a read-only-memory (ROM) construct, and used by his hacking protégé Case.

"He seems to do everything a consciousness does … he answers back, and laughs, and thinks … he desires in a way a machine cannot desire—he desires to die. … Dix is 'bothered' by his limbo status; the construct is self-aware and unhappy with its self-awareness." (Roberts 2006, p. 130).

Roberts contemplates further on the characters by saying, "The novel is full of 'real' characters who act like zombies, like the prostitutes in the Freeside brothel who operate with a neural cutout so they don't have to experience the things they do." (*Ibid*, 2006, p. 131). These human-technological hybrids embody the ontological limit between human and posthuman as an evolutionary form of "other", and are in so many ways, far more radical than their cyborg counterparts.

The character of Marie-France Tessier developed her AI philosophy as a young woman living in a beach hut in Morocco. As the most advanced forms of posthuman beings in the novel, Wintermute and Neuromancer are computerized forms of life and death, or of consciousness and unconsciousness. She designed Wintermute with the desire and the capability to merge but made the final piece of the unification puzzle a code word known only to a human, Lady 3Jane. Eluding both the Turing defences and Wintermute's prodigious knowledge base, the code is under human control.

Futurist, author and inventor Ray Kurzweil pondered the embodiment of virtual realities outside of science fiction by predicting the advent of nanobot technology by the year 2030. “If we want to experience real reality, the nanobots just stay in position (in the capillaries) and do nothing. If we want to enter virtual reality, they suppress all of the inputs coming from our actual senses and replace them with the signals that would be appropriate for the virtual environment. Your brain experiences these signals as if they came from your physical body.” (Kurzweil 2005, p. 313–314).

Moreover, science-fiction literature is replete with examples of transhumanist /singularitarian thinking. This documentation, whether it comes in the form of philosophically serious science-fiction novels, has been developed for decades by talented creative thinkers/novelists. However, only recently, with the utilization of powerful VFX computer technology, has transhumanism been brought to life so convincingly on screen. This form of media will be briefly treated here: films, which continue to dominate the popular culture.

Metropolis is the 1927 film directed by Fritz Lang, and written by Thea von Harbou. This powerful German science-fiction film presents a dismal dystopian underworld city occupied by abused workers, sprawled directly below a stylized futuristic metropolis where a cultured utopia exists. A friendship between Freder from the utopian city and the transhuman Maria, a defiant teacher sets the two on a journey of struggle and conflict in an effort to help the workers living underground. The life-like robot Maria very closely resembles the human after which she was modelled, that it causes confusion among the citizens of the city. This may well be singularity's mainstream moment. Popularized by sci-fi author Vernor Vinge, singularity refers to a theoretical point at which machines eclipse humans in intelligence, and beyond which almost everything changes.

The theme of singularity is further explored in the 2013 science-fiction film *Her*, written and directed by Spike Jonze. The protagonist, Theodore Twombly develops feelings for his AI computer operating system ‘Samantha’ with whom he can communicate orally as she is personified through a female voice. This hyperintelligent being possesses human-like attributes: singing, thinking, speaking, which have caused this unlikely circumstance, as she becomes his best friend and love. Unlike other similar story lines, Samantha and other systems in her universe are capable of thinking

and morphing without human intervention; they develop and expand on their own.

Indeed, other films that deal more directly with transhumanist/singularitarian themes such as *Autómata* (2014), *Transcendence* (2104), *The Signal* (2014), *Ex Machina* (2015) and *Chappie* (2015).
Directed by cinematographer Wally Pfister and written by Jack Paglen, *Transcendence* (2014), explores the idea of technology becoming humanoid. It is the story of scientist Will Caster who achieves one version of transhumanist ascension by transferring his mind to the worldwide computer network, he asserts, "The combined intellect of the neuroscientists, engineers, mathematicians pales in comparison to even the most fundamental A.I."

Caster's life work evolves around grand designs for achieving singularity; ironically, events lead him to become a conscious technology himself. In the film, Dr. Will Caster the brilliant, famous computer scientist working in the field of AI (artificial intelligence), works to develop a truly sentient (self-aware) quantum computer that will transcend the collective intelligence of humanity – a point he calls, "the singularity." His dual goals are to unlock the secret of human consciousness, what Caster justifiably calls the "deepest mystery of the universe," and to create a biotechnological utopia on earth.

After an attack from an anti-AI extremist group, Caster is mortally wounded and given only a few weeks to live. His wife, who is also his research development partner, along with another researcher, devise a plan to "save" Castor's life by uploading his consciousness into part of his company's supercomputer.

The metaphysical assumption is the human mind is nothing more than a reducible collection of electrical impulses and stored memories, which a powerful computer system should be able to replicate precisely, thus providing a conduit for a person's consciousness.

Autómata (2014) is a Spanish-Bulgarian science fiction action film starring Antonio Banderas. The film is directed by Spanish director Gabe Ibáñez and co-written by Ibáñez with Igor Legarreta and Javier Sánchez Donate. In Automata, set in the year 2044, robots are more technologically advanced than today, but they follow some

basic rules, one of them forbidding them to alter themselves in any way. When that rule gets broken, robots get hunted and killed. Film critic Stan Schröder observed an influence of Philip K. Dick's novel *Do Androids Dream of Electric Sheep?* Which, served as the basis for the famous Blade Runner film and Isaac Asimov's Runaround which, introduced Asimov's *Three Laws of Robotics* (Schröder, 2014).
The academy award winning film *The Signal* (2014), is an American science fiction thriller directed by William Eubank and co-written with Carlyle Eubank and David Frigerio. Through metaphor, the film intends to explore the idea that though humans may attempt to live their lives based on rules and logic, working diligently to suppress their feelings. The so-called "Signal" is that internal gnawing fire of a human's inner voice that can tell us what is true if we listen to it and that makes us humans. Eubank explains the meaning of the film's title, saying the "Signal" is a "waiting for something, listening for something, having an open heart... there are levels of what the 'Signal' really is" (Rocchi, 2014).

The film, *Ex Machina* (2015), is independent science fiction psychological film written and directed by Alex Garland. The story revolves around a young programmer invited by his CEO to participate in an experiment in synthetic intelligence by evaluating the human qualities of a humanoid A.I. In which he must interact with the world's first true artificial intelligence, housed in the body of a robot female.

The last is *Chappie* (2015), a South African-American science fiction film directed by Neill Blomkamp, written by Blomkamp and Terri Tatchell. *Chappie* is based on Blomkamp's 2004 short film *Tetra Vaal*. It investigates the possibility of artificially intelligent robots gaining sentience and demanding human rights. A broken police droid is given sentience by a scientist with a conscience and then learns to think. The scientist re-engineers the droid to allow him to transfer his consciousness into a computer, so he can change bodies when his current one dies. Blomkamp investigates the nature of consciousness. Much of that is visible in *Chappie*'s third act, which essentially attributes sentience to a vague “energy.” Blomkamp questions this simple, yet large intractable philosophical problem: are the “selves” different from brains? Which leads all the way back to Plato and his extended argument for the immortality of the soul.

5.2.2.2 The Singularity or physical reality

Singularity as many theories suggest, is the creation of a posthuman form of intelligence that is self-enhancing. Many thinkers surmise that the rate of technological development is accelerating and will continue to do so leading to this singularity sooner than we think, where the world will be dramatically transformed.

> "The Technological Singularity is the point in the predicted near future when technology allows the artificial increase of intelligence to a level far beyond that of current human intelligence. It is best described as an intelligence explosion; the event horizon which cannot be predicted beyond. The result of such an intelligence explosion would cause changes to life as we know it far beyond what is foreseeable at current human intelligence levels." (Taylor 2014, online source).

Science fiction author, computer scientist and professor of mathematics Vernor Vinge (1940) predicts that advances in artificial intelligence and the expansion of computer networks, as well as computer-human integration will lead to singularity. The same idea was suggested earlier by mathematician and inventor John von Neumann (1903-1957),

regarding a summary of a conversation with von Neumann, mathematician Stanislaw Ulam (1909-1984) described "ever accelerating progress of technology and changes in the mode of human life, which gives the appearance of approaching some essential singularity in the history of the race beyond which human affairs, as we know them, could not continue" (Ulam 1958, p. 5)

The theory is that a super-intelligent system with abilities that far surpass artificial intelligence created by humans can be driven by a positive feedback effect whereby the enhancement of intelligence will lead super-smart systems to design even more intelligent systems faster than the original human designers.

Author, inventor, computer scientist and futurist Ray Kurzweil (1948) asserts that humanity will transcend its biological foundations and become entirely technological in his book *The Singularity is Near* (2005). This next phase of human evolution is the Singularity.

As Kurzweil puts it, "The Singularity will represent the culmination of the merger of our biological thinking and existence with our technology, resulting in a world that is still human but that transcends our biological roots. There will be no distinction, post-Singularity, between humans and machines or between physical and virtual reality." (Kurzweil 2005, p. 9). Kurzweil predicts that this transcendence will occur around 2045,, "The nonbiological intelligence created in that year will be one billion times more powerful than all human intelligence today." (*Ibid*, p. 136)

Kurzweil explains that advances in robotics will be the main driving force behind Singularity because it is focused on creating nonbiological intelligences. But that exponential growth in the other areas of GNR, genetics and nanotechnology, will also be instrumental in ushering in Singularity. As Kurzweil calls them "strong AIs", these nonbiological forms will possess hyper-intelligence that "far exceed[s] that of unenhanced humans. An intelligent process will inherently outcompete one that is less intelligent, making intelligence the most powerful force in the universe" (*Ibid*, p. 260). He explains further by saying,

> Artificial intelligence [strong AIs] at human levels will necessarily greatly exceed human intelligence for several reasons. … As unenhanced humans we do not have the means of sharing the vast patterns of interneuronal connections and neurotransmitter-concentration levels that comprise our learning, knowledge, and skills, other than through slow, language-based communications. (*Ibid*, p. 260).

Critics of the extent of "humanness" of Kurzweil's posthuman nonbiological forms question whether these posthumans will still be human. Kurzweil believes that because the advanced AIs will possess and yet far surpass every aspect of human intelligence, they will also be far more advanced in terms of having a full array of emotions, spiritual longings, physical and mental illnesses (in the form of computer viruses), and, of course, the language knowledge and skills possessed today by biological humans. "The failure to see that computing processes are capable of being—just like the human brain—chaotic, unpredictable, messy, tentative, and emergent is behind much of the criticism of the prospect of intelligent machines." (Kurzweil 2005, p. 460).

Consciousness is a subjective state with no concrete objective verification. Therefore, the actions and claims of AIs that behave in a conscious manner and claim to posses

consciousness would be just as valid, or invalid, as similar actions and claims made by biological humans.

Philosopher John Searle (1932) gave a speech in 1992 challenging Kurzweil's idea of the humanity of AIs in what he calls the "Chinese Room Argument".

The Chinese room is a thought experiment to challenge the claim that it is possible for a computer running a program to have a "mind" and "consciousness" in the same sense that human do, by virtue of running the right program. The experiment is intended to help refute a philosophical position that Searle named "strong AI".

Searle imagines a room with a computer whose input is a series of Chinese symbols in the form of questions, and whose output is another series of Chinese symbols in the form of answers to those questions. Searle understands nothing of Chinese, and yet, by following the program for manipulating symbols and numerals just as a computer does, he produces appropriate strings of Chinese characters that fool those outside into thinking there is a Chinese speaker in the room. Would that be sufficient evidence to claim that the computer understood the Chinese language? The narrow conclusion of the argument is that programming a digital computer may make it appear to understand language but does not produce real understanding. Thus the argument has large implications for semantics, philosophy of language and mind, theories of consciousness, computer science and cognitive science generally.

Kurzweil on the other hand maintains a counterargument, seeing that strong AIs are self-organizing mechanisms that use neural nets, Markov models, genetic algorithms, and even more complex paradigms based on the reverse engineering of the brain both to create and alter their own make up. They are not simply machines that operate through the manipulation of symbols as input/ output data. (*Ibid,* 2005, p. 461). Kurzweil adds:

> We can build [strong AIs] in the same fashion that nature built the human brain: using chaotic emergent methods that are massively parallel. Furthermore, there is nothing inherent in the concept of a machine that restricts its expertise to the level of syntax alone and prevents it from mastering semantics. Indeed, if the machine inherent in Searle's conception of the Chinese Room had not mastered semantics, it would not be able to so convincingly answer questions in Chinese and would thus contradict Searle's own premise. (*Ibid,* p. 462–463).

The point being that nonbiological humans will not only posses all facets of biological intelligence, but will have perfected versions of them, including creative uses of language, through the reverse engineering of the human brain.

5.2.2.2.1 Singularitarianism: singularitarian transhumanists

Singularitarianism is a movement defined by the belief that a technological singularity such as the creation of *superintelligence* will happen in the near future, and that deliberate action must be taken to ensure that the Singularity benefits humans.
Our present-day intelligence is ultimately the source of our technology, and singularitarian transhumanists predict that the rise of smarter-than-human intelligence will be a significant turning point in our history, with an impact more comparable to the rise of Homo sapiens than to past breakthroughs in technology. The rise of super-human intelligence such as brain-computer interfacing and AI caused by transhuman technologies is the focus of singularitarian transhumanists. They do stress however on the importance of ensuring that such intelligence be coupled with ethical sensibility (Yudkowsky 2003, online source).

Singularitarianism coalesced into a coherent ideology in 2000 when artificial intelligence (AI) researcher Eliezer Yudkowsky (1979) wrote The Singularitarian Principles, in which he stated that a "Singularitarian" believes that the singularity is a secular, non-mystical event which is possible and beneficial to the world and is worked towards by its adherents. (Yudkowsky 2000, online source).

5.2.2.3 Communication in a posthuman condition

What types of society posthumans will live in depends on what types of posthumans eventually develop. One can project various possible developmental paths, which may result in very different kinds of posthuman, transhuman, and unaugmented human beings, living in very different sorts of societies. In attempting to imagine such a world, it is likely to base the expectations on the experiences, desires, and psychological characteristics of humans. Many of these expectations may not hold true of posthuman persons. When human nature changes, new ways of organizing a society may become feasible. The hope is to form a clearer understanding of what those new possibilities are as we observe the seeds of transhumanity develop.

But what would communication be like among posthumans in a posthuman era/condition? One assurance that Kurzweil provides is that the transmission of posthuman communication will be instantaneous and error-free. One way to appreciate the magnitude of this change is through a distinction provided by generative linguist Noam Chomsky in his landmark work, *Aspects of the Theory of Syntax*. Chomsky writes:

> Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his [sic] knowledge of the language in actual performance […] We thus make a fundamental distinction between competence (the speaker-hearer's knowledge of his [sic] language) and performance (the actual use of language in concrete situations). (1965, p. 3–4).

In Chomsky's terms, the instantaneous and error-free transmission of communication between and among nonbiological humans would collapse the performance problems of biological humans into the idealized competence of nonbiological humans by eliminating the physiological and psychological impediments to the unfettered knowledge of at least our language systems. As such, the real would become the ideal.

Chomsky points out that human languages, as opposed to all animal communication systems, have the "creative" capacity to generate an endless number of original utterances from a limited and fixed means, that makes human languages recursive, and that is the fundamental difference between human and animal communication systems. (Chomsky 1965, p. 6). The upper region of the cerebral cortex is where this recursive ability exists; it is the region that "is responsible for perception, planning, decision making and most of what we regard as conscious thinking. Our ability to use language […] appears to be located in this region" (Kurzweil 2005 , p. 190). Kurzweil notes that if the human brain is subjected to reverse engineering, this will lead to the mapping out and reproduction of the layers of the cerebral cortex in nonbiological humans to equip them with the recursive use of language like their biological predecessors.

But human communication is more than just perfect information transmission and the ability to generate infinite utterances from a finite means. As one case in point, there is the well-documented content/relationship distinction in face-to-face interactions where

the “meaning of the message” is often the effect that it has on the relationships between or among the participants and has little, if anything, to do with the “cotent” of what is actually said or with how fast and accurately it might be said. Would posthuman communication preserve these sorts of subtle distinctions?

Kurzweil actually addresses the content/relationship problem, albeit indirectly, when he talks about the most complex form of the Turing test:

> The gold prize [of the Turing test] is based upon visual and auditory communication. In other words, the AI must have a convincing face and voice, as transmitted over a terminal, and thus it must appear to the human judge as if he or she is interacting with a real person over a videophone. On the face of it, the gold prize sounds more difficult [than the lesser bronze or silver prizes]. I’ve argued that it may actually be easier, because judges may pay less attention to the text portion of the language being communicated [the content] and could be distracted by a convincing facial and voice animation [the relationship]. (2005, p. 294)

Although Kurzweil recognizes that more is involved in the communication among nonbiological humans than recursiveness and instantaneous transmission, it is clear that his comments are essentially hypothetical, because the proverbial gold prize has never been awarded.

Chapter Six:
Conclusion

6.1 *The Seven Days, The Heavens and The Earth*: Practice-based research that informs a transcultural visual communication system in a posthuman condition

6.2 *The Seven Days, The Heavens and The Earth:* a case study

6.3 Conclusion

Chapter Six: Conclusion

This chapter is an investigation of a work of art I produced for the Venice Biennale, 2015 under the title: *The Seven Days, The Heavens and The Earth*. The project is a visual comparison of the religions interpretation of the myth of creation from ancient Egypt to the Abrahamic religions. The project elements investigate several notions of the myth of creation, in a symbolic approach rather than a literal interpretation.

Presented as a case study, the project's premise is based on the use of pictorial language as a universal mean of communication. It proposes the adoption of a shared trans-cultural collective knowledge of signs, symbols and pictographs that may be utilized in the future development of universally accepted communication and information systems.

"In the beginning God created the heavens and the earth".

Genesis 1:1

6.1 *The Seven Days, The Heavens and The Earth*: Practice-based research that informs a transcultural visual communication system in a posthuman condition

In ancient Egyptian mythology, especially within the Ennead (the hierarchy of nine creator gods) of Memphis, lie beautiful stories of the creation of the universe, the world, and the mystical underworlds. The first of the nine gods of creation emerges from infinite, he created himself by himself and created everything else, an conviction found at the core of all three Abrahamic religions. The whole universe emerges from this infinite vacuum. Atum, the first of the nine gods, emerges at a time called Zep Tepi from the Im (pronounced eem), which is the eternal river/sea. The ancient Egyptian term Zep Tepir, 3200 BC translates in modern language to, "the first happening," though modern language does not carry the ancient language's powerful imagery. Zep Tepi is to researchers reminiscent of modern science's big bang theory. Involved in this creation process in the heavens are a whole set of deities and sanctified mysterious figures-turned-gods: the Ogdod, or the eight supportive gods of Genesis who are four females and four males in perfect balance, Atum, who created himself by himself and created everything else, Ptah, the key to all architecture, fine art and divine perfection, and Amun, properly pronounced Emen.

Five thousand two hundred and some years after such mythological creation, descendants of those creators create and live an era of information explosion in which data, news, and knowledge of all kinds stream seven days a week, twenty-four hours a day, every single day of any lifetime. It has become a challenge to pick and choose relevant information. During those five millennia, many religions and beliefs have emerged and shaped the perception, attitudes, and behaviors of every human living today.

In some popular Christian beliefs, God created the universe in six days, while the common Islamic belief –very much influenced by Sufism developed under Spanish Andalusia-- is that God created the world in seven days:

In the first day, God created light and separated the light from the darkness, calling light "day" and darkness "night.

On the second day, God created an expanse to separate the waters and called it "sky.

On the third day, He created the dry ground and gathered the waters, calling the dry ground "land," and the gathered waters "seas." On day three, God also created vegetation (plants and trees).

On the fourth day, He created the sun, moon, and the stars to give light to the earth and to govern and separate the day and the night. These would also serve as signs to mark seasons, days, and years.

On the fifth day, God created every living creature of the seas and every winged bird, blessing them to multiply and fill the waters and the sky with life.

On the sixth day, He created the animals to fill the earth. On that day too God created man and woman “in his own image,” to commune with him. He blessed them and gave them every creature and the whole earth to dominate, use and rule over. He ordered the man to construct, build and cultivate. On the last day, the seventh, God declared his work completed, blessed it, and had the design for the life we live.

"Verily We created man from a product of wet earth; then placed him as a drop (of seed) in a safe lodging; then We fashioned the drop into a clot, then We fashioned the clot into a little lump, then We fashioned the little lump into bones, then clothed the bones with flesh, and then produced it another creation. So blessed be Allah, the Best of Creators!"

[23:12-14] Holy Quran

The text evokes the idea that the earth was formless, empty, and dark, and the creator's Spirit moved over the waters preparing to perform the creation of the world. Moreover, he began to speak into existence, his creation. This image is almost identical to the ancient Egyptian description of how Atum whistled life into a vacuum to have everything created.

At the beginning of the 19th century, most of Europe had accepted the biblical *Genesis* creation narrative as true, but debate had started to develop over applying historical methods to biblical –and similar sacred books in the like-criticism, suggesting a less literal interpretation of the accounts and language of the *Bible*, and similar holy books, a discourse reappearing fiercely today in the Middle East, in quest for a novel moderate interpretation of Quran's text, that would foster tolerance and peaceful cohabitation.

The publication of Darwin's *On the Origins of Species* in 1859 brought scientific credibility to notions of evolution and made it a respectable field of study. Since this publication appeared, the human history of science has never been the same: This marked the beginning of the creation vs. evolution debate.

This two centuries old debate involves a recurring cultural, political, and above all theological dispute about the origins of the earth, of humanity, and of other life. This debate rages most publicly in the United States, and to a lesser extent in Europe, while it is radically rejected in the Middle East and by the authorities of its three religions. It is often described as a cultural war between the secular and the religious, between science and faith.

The level of acceptance and support for evolution theories as the origin of humankind is extremely high within the scientific community and academia all over the world,

with 95% or more of scientists and academics believing and supporting evolutionism. Support for the Middle East Abrahamic religions propositions for the start of life or other creationist alternatives is very low among scientists in general, and virtually nonexistent among scientists in the relevant fields.

Religious thought, whether Christian, Jewish or Islamic dispute the scientific evidence of common descent of the current human form and other animals, as demonstrated in contemporary sciences of paleontology, archaeology, genetics, histology and cladistics, as well as other related scientific sub-disciplines which are based upon the conclusions of modern evolutionary biology, geology, cosmology and other related fields.

They argue for the Abrahamic accounts of creation, framing them as reputable creation science. While the controversy has a long history, today it is mainly over what constitutes good science curricula accepted to teach at schools. A 2014 Gallup survey reports:

Scientists and theologians have written eloquently about their awe and wonder at the history of the universe and of life on this planet, explaining that they see no conflict between their faith in God and the evidence for evolution. Religious denominations that do not accept the occurrence of evolution tend to be those that believe in strictly literal interpretations of religious texts.

Theology historian Mircea Eliade describes in her seminal work *illo tempore* , translated as *At That Time*, creation myths are often sharing some similar often-occurring features. They are often considered sacred accounts and can be found in nearly all known religious traditions and forms. They are all stories with a plot and characters that are either gods or goddesses adopting human-like figures or animals, who often speak and transform easily. They are often set in a dim and nonspecific past. Creation myths address questions deeply meaningful to the society that shares them, revealing their central view of the world and its daily activities and happenings, as well as the framework for the self-identity of the culture and individual in a universal context.

6.2 *The Seven Days, The Heavens and The Earth:* a case study

The art project *The Seven Days, The Heavens and The Earth* is one of the pan Arab exhibitions at the 56th Venice Biennale 2015 entitled In The Eye of the Thunderstorm curated by Martina Corgnati, Professor of art history at the Albertina Academy of Fine Arts in Turin, Italy. Several Arab and International sponsors supported the project and are helping the project to tour –after the six-months exhibition at the Venice Biennale to a diversity of art venues, including museums and cultural institutions.

Description of the main results/foregrounds

The project *The Seven Days, The Heavens and The Earth* is an installation [figure 54], composed of seven fragments 3:30 minutes of animated film, a visual research handmade book size 59.4x42cm [figure 55, 56, 57, 58, 59] and seven clay/ceramic objects symbolizing the creatures of the seven days of creation (size between 10x10x10cm and 20x20x20cm), [figure 60, 61, 62, 63] in a glass vitrine display table size 150x70x100cm.

The Seven Days, The Heavens and The Earth was widely received at the Venice Biennale as seen in the photographs below [figure 64]. There has been an extensive critique from the audience and reporters that have later documented and released articles about the exhibit's success.

Project Analysis

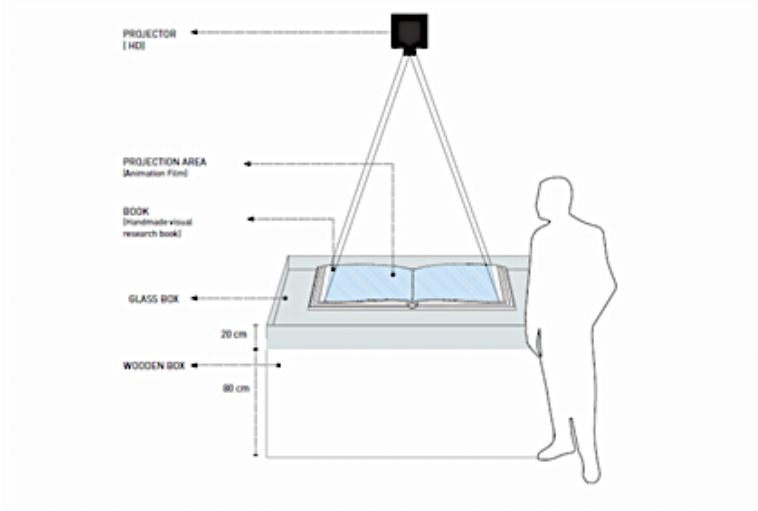
The Seven Days, The Heavens and The Earth project elements investigate several notions of the myth of creation, in a symbolic approach rather than a literal interpretation. The creator's hand is visually explored through mythological, historical, and religious lenses.

A virtual question is continuously proposed: the creator versus knowledge, versus information, versus strand theories and human propositions that manage to explore and explain all myth. There is always the challenge of the right choice: easy answers of collective conscience versus alternative inputs and reception mechanisms that threaten the established.

The video installation is composed of seven fragments (short animated films) of seven artists hands creating unrecognized shapes from clay, a visual reflection symbolizing

the seven days of creation. The animated films are projected on the handmade book, which will be open and placed over a glass vitrine display table. The wooden glass vitrine display table includes the seven ceramic sculptural shapes. The book exhibits the visual research on the myth of creation: material from mythological, historical, and religious sources, using a pictorial language to that shows the global use of a common systems of visual semantic decoding could allow for the visual integration of different individuals from diverse cultural backgrounds [figure 65, 66, 67, 68, 69,70, 71, 72, 73].

Audiences are invited to interact with the project by turning the pages of the book, while animated projections interact with the pages and the audience hands. Every spread (two confronting pages) recounts a different story of creation, fictitious, existing, or fused.



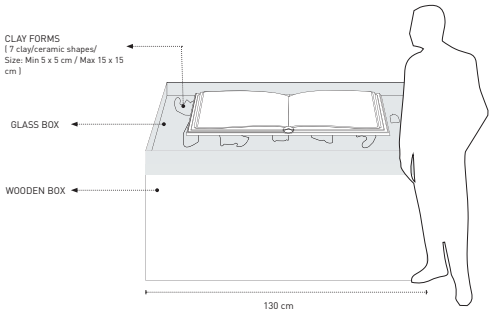
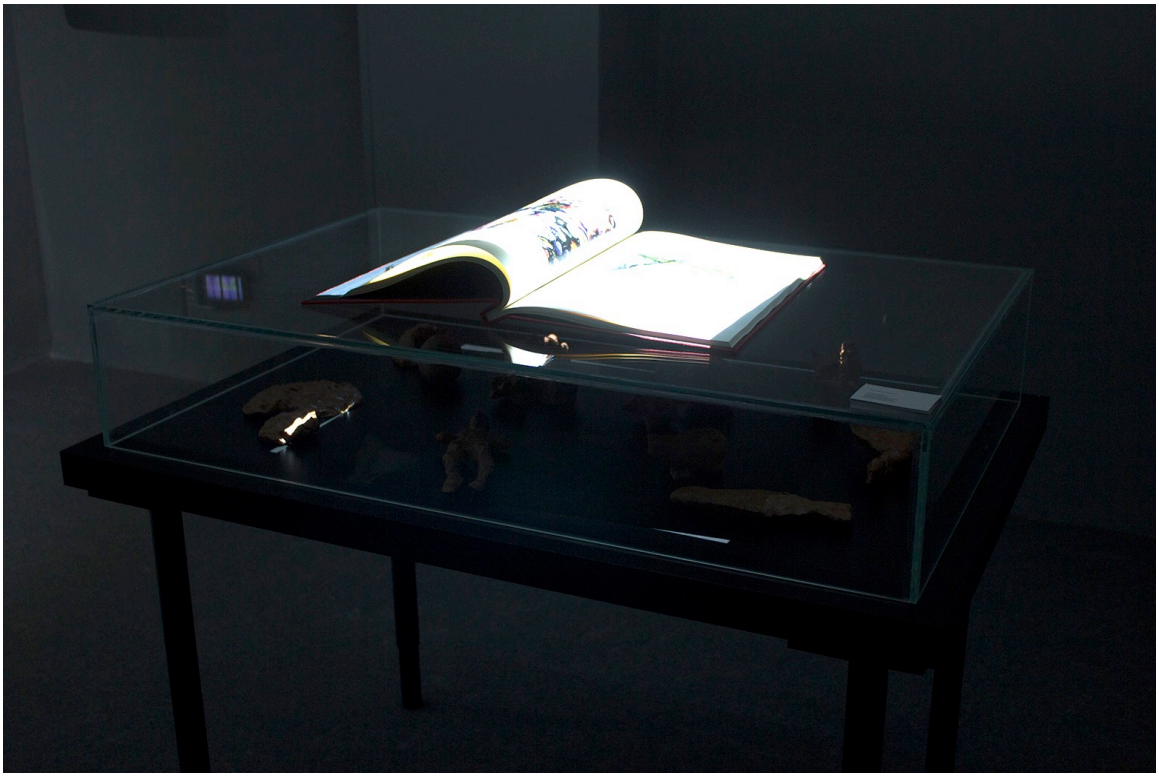
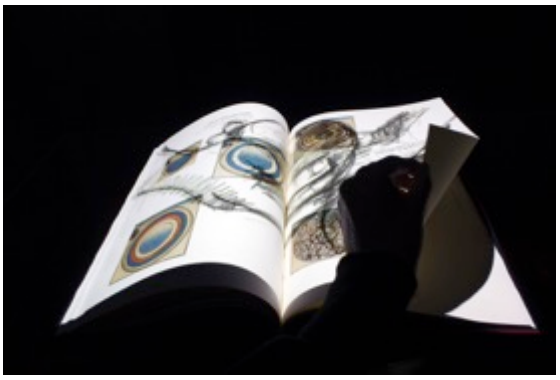


Figure 54. Concept and technical drawings presented in the application and project proposal





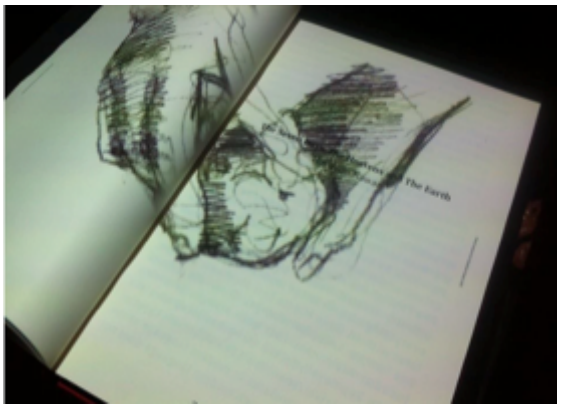


Figure 55. The glass vitrine display table with the seven ceramic objects inside, and the visual research book.

Figures: 56, 57, 58, and 59. Detail from the visual research book with the animated film projected.

Figures: 60, 61, 62, and 63. Four ceramic objects symbolizing
(Fish, Man, Bird and Tree)

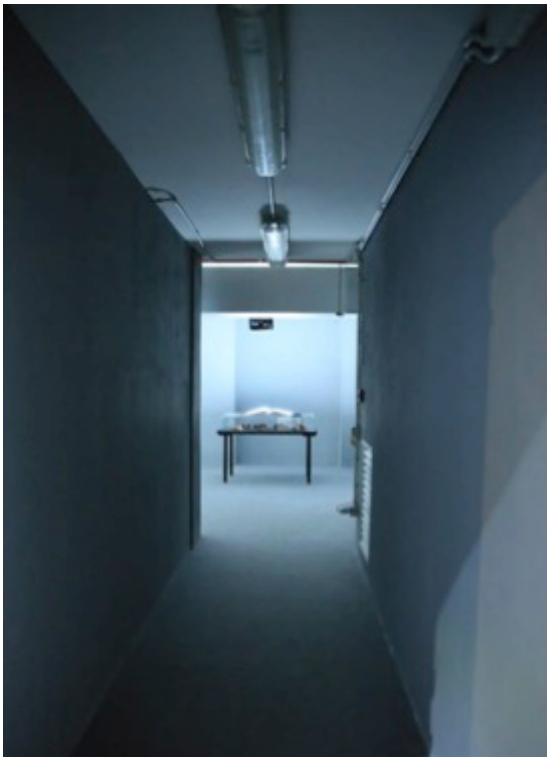
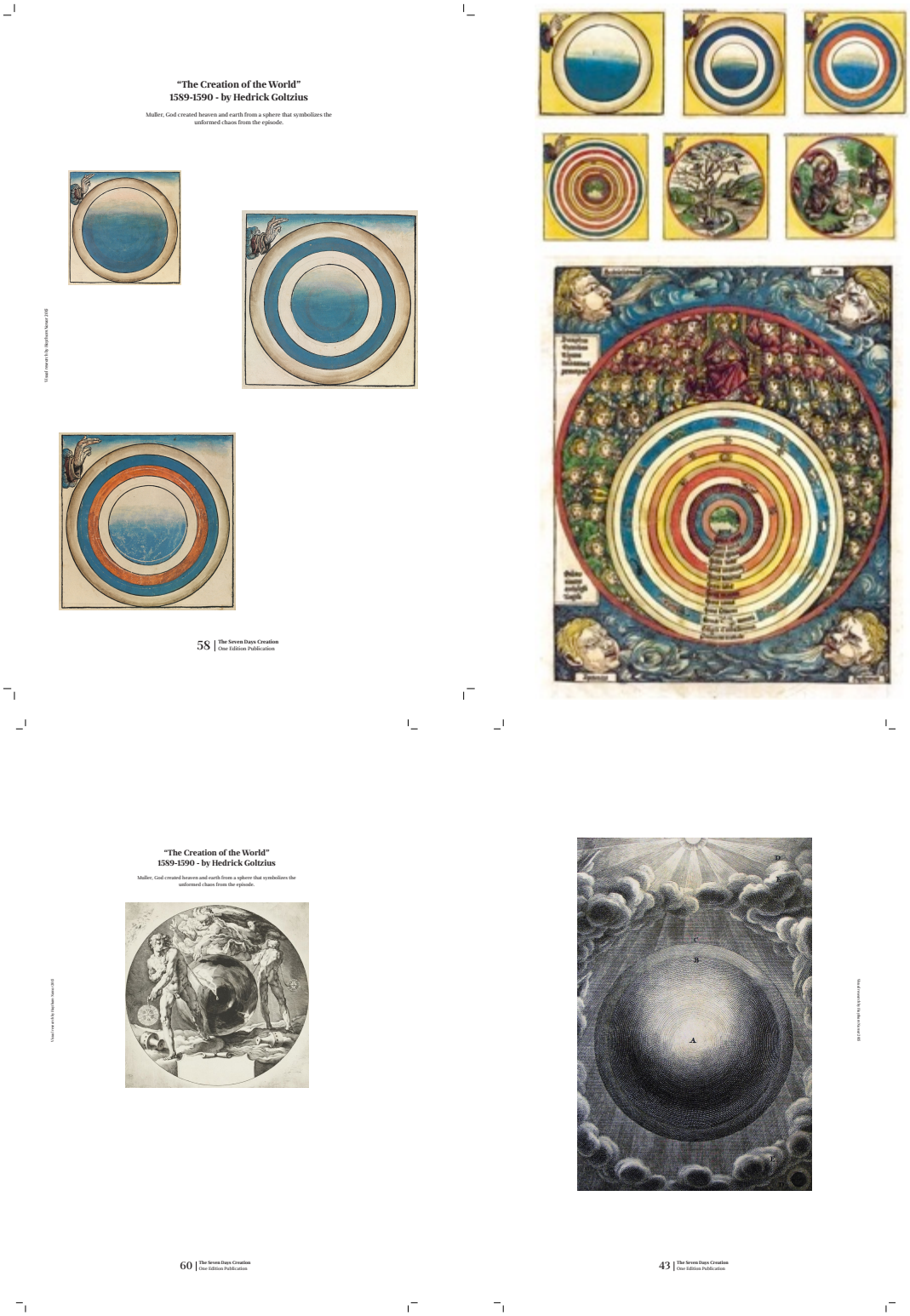


Figure 64. The installation at the actual venue in the 56th Venice Biennale 2015

Figures: 65, 66, 67, and 68. Selected sample pages from the visual research book *The Myth of Creation* (Top left: the myth of creation in Ancient Egypt, top right: the tree of life in Ancient Sumerians and the Egyptian symbol of the sun placed in the top of the tablet, down left: the Maya myth of creation and down left: Miniature from Western Iran, second half of the 16th century).



Figures: 69, 70, 71, and 72. Selected sample pages from the visual research book *The Myth of Creation* (Top left: the six days of creation from the Nuremberg Chronicle 1493, the illustrated biblical paraphrase and world history, top right: detail from Nuremberg Chronicle 1493, down left: The Creation of the World 1589-1590 by Hedrick Goltzius and down left: Genesis from the Bowyer Bible, Bolton Museum in England).

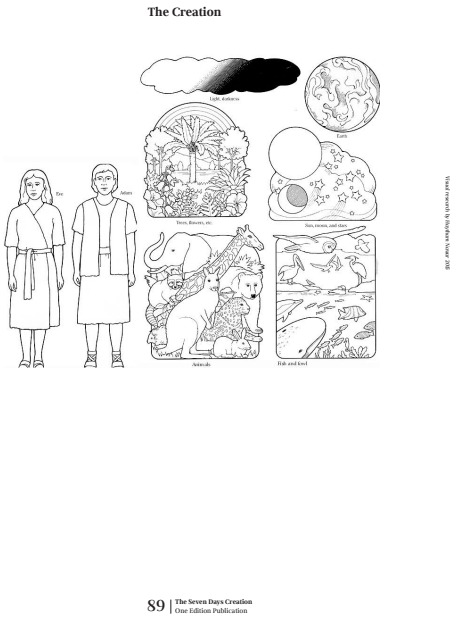


Figure 73. Selected page from the visual research with pictographic illustration by Beth Whittaker shows; Eve; Adam; Light, Darkness; Earth; Trees, Flowers, etc.; Sun, Moon, and Stars; Animals; Fish and Fowl.

This project research is located within a historical and contemporary context that allowed artistic and experimental creative practice. Through the analysis of pictographic communications in the previous chapters which investigate linguistic approach of the pictographic, ideographic, logographic writing systems starting from Proto-writing, to Mesopotamian, Egyptian hieroglyphs, Mesoamerican writing systems such as Maya, Zapotec, Isthmian script/Epi-Olmec script, Mixtec and the Nahuatl. Also the Dongba symbols - Naxi script, and the Nigerian Nsibidi.

Moreover, the study included ancient Chinese characters and also an analysis of selected constructed fictional scripts used in books, films, and computer games.

Also studying contemporary constructed pictographic methods such as Emoticons (Eastern and Western styles) until its development with current forms such as iConji and the Emojis. More developed systems such as Blissymbolics and more

informational approaches such as Isotype, Additionally, the Nobel Universal Graphical Language and the Pictoperanto. Inspired by Bliss system, the LoCos Universal Visible language, and the Earth Language. Similarly, it examines the artistic and experimental projects such Frutiger's Universal Mean Perception and Xu Bing's project 'Book From the Ground and the pictograms of the Noun Project.

Furthermore, the study of semiotics is implemented in the project, and its use in visual communication in particular of the semiotics of pictographic communication and the cognitive approaches to pictographs. Also, it was considered questioning the trans-culturalism, multiculturalism and trans/posthumanism and, in particular, the cultural posthuman and posthuman communication.

The project proposes a context within which society can develop a transcultural means of communication. The project is a visual comparison of the religion-based interpretations of the myth of the six days of creation from ancient Egypt to the Abrahamic religions. The project elements (visual research book) investigate several notions of the myth of creation, in a symbolic method. Universal elements such as human, Eve, Adam; light, darkness; earth; trees, flowers; sun, moon, and stars; animals; fish and fowl.

The project focuses on using similarities between the different cultures of the world and its visual interpretation of the religious subject: the myth of creation (universal story of creation) as a case study with the objective of gaining completely unambiguous forms of understanding. However, meaningfulness remains the main difficulty in processing the iconic information represented in pictographs.

6.3 Conclusion

Through the reflection on my practice, the following are proposed points that lead to a (universal story of creation) pictographic communicational conception:

1- In order to maximise visibility and comprehension of the communicative pictographs, appropriate levels of complexity and detail must be present. The communicative pictographs should not employ unnecessary and excessive representations of reality; instead, they should contain less detail and should be easily distinguishable.

2- Uniformity: It is essential that the design of the new symbols be consistent with universal symbols and build further on concepts that are already recognized and understood.

3- Discriminability: The reader must be able to discern between one symbol and the other, thus rendering the symbol effective.

4- Legibility: Aside from content and familiarity, other factors that facilitate legibility and comprehension are the size of elements and their separators, as well as the levels of contrast between elements.

5- The intended use of a pictograph will – to some extent – determine the necessary level of complexity and detail. A sequential design approach helps achieve an optimal level of comprehension by starting with a basic shape that has minimal details then adding more details one by one. (c.f. Magurno, Kohake, Wogalter and Wolff 1994; Pelegrina and Gallifa 1994; Beltran and Auque 1993).

6- The 'typicality effect' (relatedness) (Katz 1981): Pictographs should make use of familiar/typical images because it is mainly familiarity – not number of features or literalness – that determines the reader's understanding. Some pictographs are displayed with verbal information to ensure the accurate communication of the intended message.

The effectiveness of pictographs can be assessed by presenting them in the environment/conditions in which they are meant to be seen (Wolff and Wogalter 1998).

Context helps elucidate the message expressed in a pictograph. When a large amount of contextual information is provided, it tends to eliminate a certain number of confusions. The context, which aids in interpreting the pictograph's meaning and which helps reduce the pictograph's polysemy, is partly formed by this environment, and partly by the task at hand. Recommendations have also been made regarding learning. Pictographs, which are not immediately recognized may be learned rapidly, after which the role of the pictograph is to stimulate recall of that information. Thus the ultimate success of a pictograph would depend on the users' ability to learn it

carefully. Taxonomies enable users to differentiate between pictographs, and to use ontologies to differentiate between the meanings of pictograph components. All of these recommendations could be achieved through the collaboration of designers, ergonomists, engineers, linguist and psychologists.

A pictographic communication system, beyond the general conceptualization, should have a particular grammar. The following are key elements in a proposed grammar for a pictographic communication system: Visual Emphasis (*backgrounding*); Adjectives/Determinatives; Visual Verbs (speed lines, animations, suggest action, action words, verbs); Compound Icons; Plural; Epitomes, metaphors, and multiple epitomes; Pronoun (based on common finger pointing); Genitive; Possessive Pronoun (combining the personal pronoun with the genitive); Auxiliary verb (based on body language).

Critical reflection

> (...) There is not the slightest reason to believe in a coming singularity. The fact that you can visualise a future in your imagination is not evidence that it is likely or even possible. Look at domed cities, jet-pack commuting, underwater cities, mile-high buildings, and nuclear-powered automobiles—all staples of futuristic fantasies when I was a child that have never arrived. Sheer processing power is not a pixie dust that magically solves all your problems (…). (Pinker 2011)

There are two main ramifications associated with the notion of technological singularity:

Uncertainty and risk: The technological aspect of singularity reflects the idea that such change may happen suddenly, and that it is difficult to predict how the resulting new world would operate. It is uncertain whether what is named as an intelligence explosion of this kind would be beneficial or harmful, or even an existential threat.

Implications for human society: Which is the potential impact of the hypothetical possibility that robots could become self-sufficient/conscious and able to make their own decisions. The discussion of the extent of whether computers and robots might be able to acquire autonomy. Of course, it can always be argued that science-based reality and its literature such as *Neuromancer* (1984) is still science fiction since we do not live in that world. In the real world, communication can still never overcome the

embodied differences that separate individual human beings. In the previous chapter we looked at the science-fictional world of film and literature: from science fiction to the physical reality and Kurzweil's singularity, this all culminates into Kurzweil's vision of the future of humanity as one characterized a strong AIs as nonbiological humans.

Obviously, posthumans would have to possess more communication knowledge and skills. And although Kurzweil does not address the communication practices of nonbiological humans in any detail, from the few isolated snippets about language and communication that have been cited, there seems to be no theoretical reason why such beings could not practice, and even perfect, the complete array of communication skills most biological humans know and use today.

The argument for that extension about communication in that reality/condition would become more complex through the diversification of channels and message formats whereby such channels and formats would be increasingly nanosized and would include communicating in and outside of our biologically set senses. In addition, posthuman communication would be greatly enhanced through instantaneous, error-free transmission, by eliminating the biological limitations of memory, attention span, communicative focus, contextual distractions, bodily fatigue, etc. and by preserving even the more subtle, complex aspects of human interaction as, for example, the content/relationship distinction in face-to-face encounters.

Moreover, Professor of Communication John Durham Peters (b. 1958) in his book *Speaking into the Air: A History of the Idea of Communication* states, "To view communication as the marriage of true minds underestimates the holiness of the body. Being there still matters even in an age of full-body simulations" (1999, p. 269–270). However, even if our embodied souls in physical reality cannot merge because of their biological limitations, Kurzweil argues that our re-embodied souls as machine intelligence can. Moreover, if in posthuman condition where biological humanity gives way to some technological intelligence is the next advance on some grand evolutionary chain.

It comes as no surprise that posthumanism is still received with both terror and excitement. The reaction clearly depends on which side of the human divide one

stands. Some people view posthumanism as the long-awaited decline of human control, while others opportunistically transfer the 'autonomous liberal subject' into the realm of a supposed disembodied and posthuman virtuality.

Apparently, posthumanism embodies politics and, as Academic Elaine Graham (b. 1959) asserts, "Contemporary technologies carry ethical and metaphysical, as well as material, implications such as issues of identity, community and spirituality" (2004, p. 12). In addition to this are the hidden agendas of posthumanism, which have to be revealed, questions such as: "what it means to be human, who counts as being fully human, who gets excluded and included in definitions of the (post)human – as well as what visions of the future are idealized – and idolized – in the name of technoscientific aspiration."(*Ibid*).

When we reach the exalted state of posthumanism, it will probably not be a haven of corponeutrality with no traces left of our all too human and immanent predecessors, but will rather be more a case of the posthuman being sculptured and tweaked according to very specific socio-political contexts.

Author Joel Dinerstein argues, "Only the myths of progress, the Adamic, and white, Western superiority require a posthuman future. The posthuman is the dream of bodies of pure potentiality - ones that do not decay but plug into networks of information and pleasure" (2006, p. 588). It therefore seems that posthumanism is not a possibility for all, but is only reserved for those who have "the wealth, power, and leisure to conceptualise themselves as autonomous beings." (Hayles 1999, p. 286).

If posthumanism is preparing for a post-biological future that has transcended the inconvenience of immanent corporeality through technological intervention, what kind of aesthetics will best suit it? The role of visual and imaging technologies in the construction and realisation of posthuman aesthetics cannot be overstated or over-emphasised.

In her paper Posthuman Conditions (2004 online) published in Theology and Sexuality, Graham points to historical (fictional) post-humans, "From the myth of Prometheus, the Jewish legend of the Golem, the Gothic horror of Frankenstein's monster, to contemporary postmodern science fiction, a gallery of fantastic creatures

haunt Western myth, religion and literature." (Graham 2004, p. 28). Posthuman aesthetics and imaging technologies are intimately intertwined, with often quoted statements by visual culture theorists that "modern life takes place onscreen." (Mirzoeff 1999, p. d2), only accentuating that relation. The posthuman finds an opportune ally in the visual to codify its aesthetic signals of transcendence onto flickering screens everywhere. However, it first has to be established whether an aesthetic of transcendence is possible and if so, how it presents itself through the visual.

Proposal for future work

Through this research understanding of the complexity of a universal language can be achieved. The research firmly establishes a confidence to work in a visual-based mean of communication that leads to a universal form of communication or provide a more coherent approach, thus creating possibilities and facilitating easier integration for individuals in various domains and societies.

The collecting of stands in a cohesive and comprehensive way generates a solid platform for the development of a consequent research and impactful practice that continues to explore a Transcultural Visual Communication System in a Posthuman Condition.

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