Transmedial Time Constructs: Four Causes for Accidents in the Making

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Representational and technological paradigm shifts offered historically a fertile ground for the architectural imagination.[1] Being on the cusp of a *longue durée* technological shift from analogue to digital drawing offers an opportunity for the proliferation of possible transmedial conditions.[2] The first year undergraduate drawing and multimedia courses at the Azrieli School of Architecture and Urbanism at Carleton University, challenge a current understanding of drawing as image production through the use of a single dominant medium, portraying mirror-likes of future buildings that fix the ending of the design process.[3] This arguably reduces drawing to a final representation, processing prematurely finished images of architecture. Conversely, transmediality places attention in changes of media that create gaps to foster the construction of ideas. Living in a culture of dead-lines, finished images, and limited budgets, the imagination of drawing and building in time are fast eliding. These considerations on transmediality propose that an imagination of endings is replaced by an imagination of beginnings, revealing the inherently unfinished character of architectural representation.

Ideas emerge through omnidirectional hand and digital transmedial exercises. Students experience the imaginative nature of architectural drawing as an open process, rather than a close production system. Transmedial time constructs are a means to the discovery of ideas, and not a seamless execution of pre-concepts. Concepts develop in the exploration of mediums through both high and low technologies, digital and hand work, experiencing the disruptive resistance that arises in the changes of mediums and techniques. Drawing is not mere transmission of information; it can inform open explorations that are precise and imprecise, regulated and unruly, making room for an active imagination.[4]

In a transmedial process ideas are formed and deformed in the passage from one medium to another (Fig. 1). Changes of medium accelerate imaginative discoveries. The traction of transmediality is

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[1] Carpo 2011: 51-79. Walters 2012: 488-490.
[2] Goodhouse 2017. Lynn 2013. Belardi 2014.
[3] The drawing class has been taught by Federica Goffi since Fall 2011. The Multimedia Class has been taught by Adriana Ross since Fall 2016. The teaching assistants who contributed to the success of both classes and supported the students over the last two years include: Alberto Temprano, Simon Petepiece, Émélie Desrochers-Turgeon, David Anderson, Diego Juarez Gallo, Dylan Morris, Lynn Pfeffer, Frank Wen Yao and Andrej Iwanski for the Drawing Course (ARCS 1005); Émélie Desrochers-Turgeon, Dorothy Lee, Matthew Hagen, Kim Béatrice Coussa, Stephanie Murray, Paola Vega, Annie Taylor, Justin Yan and Stanley Wong for the Multimedia Course (ARCN 2106). See also Goffi and Lepage (2013) for an earlier collaboration between the drawing course and the multimedia course at the same school.
[4] Hauser, Zumthor & Binet 2007: 105.

experienced when models become contact photographs; contact photographs become drawings; drawings become buildings. Each change of medium draws out the imagination. This ability can be transferred from drawings to buildings as a completed act. This happens when the drawing remains open and ambiguous, which is not to say vague, or imprecise. Only when unfinished drawings retain their ability to draw-out the imagination, and facilitate multiple readings that keep the design and construction process open ended, before, during and after construction.

Blurring the distinction between drawing and model, analogue and digital, architectural drawings are conceived as three-dimensional material and cultural presences engaging with multimodal sensory perception. Beginning design students explore the transmediality of physical models becoming drawings, which turn into photographs, and scans that are shredded and collaged. A transmedial process enacts timely material transformations and deformations that generate opportunities for serendipitous discoveries. The exercises rely on a tension between shifting notions from analogue to digital tools and vice versa, to challenge the use of a singular medium, and conceive of architectural representation as a transmedial time construct. Theoretical and temporal gaps between representations are explored and kept open. The transmedial exercises construct the awareness of the three-dimensional depth in orthographic projections, arguing that architectural drawing is never two dimensional. Periodic media shifts offers the imaginative lens to experience an expedient and deep architectural gaze.

Fig. 1 © Courtesy of Lauren Liebe. From left to right: embroidering floss and wire space on canvas; labyrinth model tin foil; labyrinth floor plan, silkscreen and tin foil on mylar; labyrinth drawing scan; plaster and form on cardstock frame.

The speed of drawing versus drawing speed

Architectural representation is not visual duplication. Drawing does not simply stand in for another reality, it is a real virtuality. Transmediality entails more than an ability to work in different mediums. It results from constructing ideas in the passage from one medium to another. This happens when quite literally something in one medium passes, transforms, deforms into another, through contact, chemical alteration, cutting, altering of a medium through another medium. Representation is not the illustration of ideas, rather it transmediates ideas. The transmediality of architectural imagination from material medium to idea, brings attention to the role of media-shifts in a process where each medium, whether digital, or analog, constructs the imagination. Changes of medium form through deforming, ultimately constructing ideas over time.[5]

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[5] Bachelard 1999: 12. Bachelard 1994: 156. Bachelard 2011: 1-3.

Conversely, working predominantly through one medium codifies the imagination, and not just the drawing, as it may be assumed. Changes of mediums are essential to a fuller design process and to renewing our capacity to envision through making. Through media changes that which is being transferred is just as important as that which is left behind. Invention (Lat. *invenire*) is a process of negotiating between what was made with what is found in the making. Rather than a process of information building through drawing (BIM), which entails that elements are held together by a digital medium through a grid of Cartesian coordinates, this converse process suggests that working in a variety of mediums forms and deforms ideas through the exploration of hybrid conditions.[6]

The speed of drawing and drawing speed are two different things.[7] Attention is often directed to the overemphasized necessity for drawing speed, which correlates with the building industry's own speed in increasingly more complex projects. In the upper years of design education countless hours are spent by students in an effort to mimic the profession through the use of a dominant medium chosen for a specific project, while working in the context of an increasingly more digital profession, in what was recently defined by Mario Carpo as the second digital turn, which is credited to architects for the sake of mass customization, towards an efficient planning of real time construction. Conceptually makers have become executors.[8] This is achieved through dimensional precision, and the specification of pre-qualified material assemblies. The intent is to seamlessly illustrate ideas to be transmitted to a multidisciplinary team in the building industry. The construction site is increasingly an assembly site.[9] Little is left open to the interpretive skills, conversely asking industry workers to relinquish influence.

An efficacious drawing is not an illustration, nor an exhaustive repository of information. Real accelerations of time happen in media changes (Fig. 2). Transmediality opens up the project to a multiplicity of possibilities through a plurality of material explorations. The real speed of drawing cannot be measured, rather it can be experienced in serendipitous discoveries that happen through transmedia explorations. Intuition is the gift of instantaneous moments of revelation through making. Ideas may diverge before they converge into a building. Transmediality is relevant in the early design process, but should not be limited to this stage of design. While the ability to be in command of state of the art digital technologies develops, the dominance of these tools invades the early stages of design explorations. At times the design process is reduced to a single medium, with the adverse effect of stalling the imagination; meanwhile all-of-the-time is invested in the fast production of a comprehensive inventory of information. Students in the upper years often are required to take on the role of an entire professional design team in comprehensive design challenges that do not provide a good reflection of design practice, where each member has a specific role and might design at a specific scale of inquiry, and the most important skill is collaboration.[10]

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[6] Frascari 2011: 111-115.
[7] Calvino 1993: 31-54.
[8] Carpo 2017: 1-8
[9] Kieran and Timberlake 2003: XI-XIII.
[10] The CACB lists "A5 Collaborative Skills" as one of the professional criteria for accreditation of Canadian schools of architecture; however, all other criteria have to be demonstrated by each student independently, thus the qualities of collaboration remain underexplored in architectural education. CACB Conditions for accreditation 2012. http://cacb.ca/wp-content/uploads/pdf/conditions_and_terms_for_accreditation.pdf, accessed on March 1, 2018.

Transmedial Exercises: Four Causes for Accidents

The drawing course is composed of eleven exercises in drawing-thinking,[11] which build in the assimilation of basic drawing board skills, such as "how to" set up orthographic projections, isometric, axonometric, etc., meanwhile elucidating the theoretical underpinnings of drawing to comprehend the "why to" of the drawing by hand in a predominantly digital age, asking this question: What does hand drawing wants to be, today? The multimedia course offers an introduction to the theoretical, conceptual and technical aspects of working with media such as digital photography, cyanotype, photomontage, crumplage, scanning, collage-de-collage-hybrid, Photoshop, sound and video editing. The course is structured around two main themes, traces in time, and presence/absence.

Exercises in the drawing class transmediate into multimedia exercises, and *vice versa*, adding layers of drawing-thinking to an initial material exploration. Transmediality allows students to explore the making of drawing as a hybrid process that arises from the interactions of Aristotle's four causes: material, formal, final, efficient.[12] The four causes come into play in time giving rise to accidents in the making, that are experienced through instantaneous discoveries, developing an ability to read into a transmedial process. An ability to draw-out ideas rather than pre-form, or pre-fab, teaches to work with, and across materials, developing a sense of authorship through making. Forethoughts and afterthoughts arise in media changes that reveal the role of accidents as the imaginative core of design. Accidents result from an inordinate multidirectional interaction between the four causes, and allow experiencing real time-lapsing through accelerated drawing discoveries (Fig. 3).
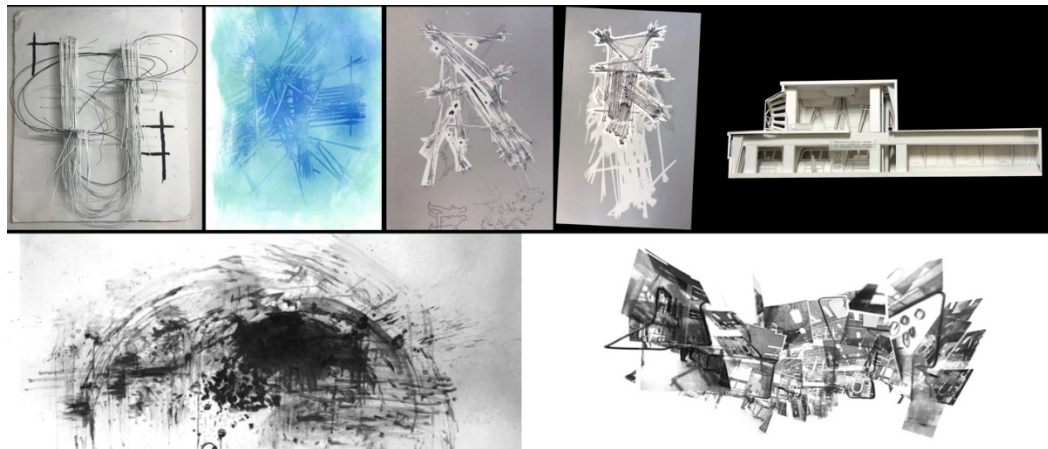

Fig. 2 © Courtesy of Ear Jimmy. From left to right, top to bottom: creative cycle in metal wire, cardboard; cyanotype on watercolor paper shadows; ink and pastel on Mylar labyrinth; Lucas' Studio in balsa wood and card stock; horizon in graphite powder and water on Roma paper; deconstruction in Photoshop cs6.

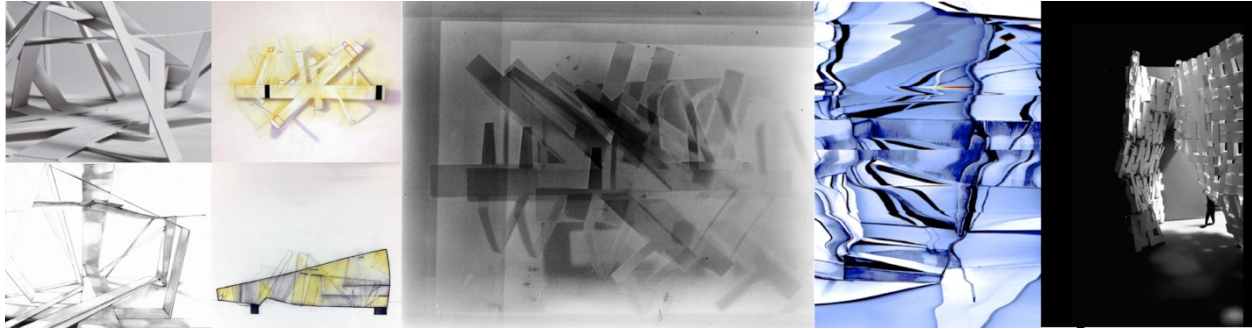[11] Treib 2008: 14-16.
[12] Aristotle 1998: Met X VII.

Fig. 3 © Courtesy of Andrea Forero. From left to right, top to bottom: linear entwine of strips of watercolor paper; linear entangle of graphite on Bristol paper; linear expanse of graphite, color pencil and pastels on mylar; linear fracture of graphite, color pencil and pastels on mylar; linear x-ray photosensitive paper and Photoshop; linear refraction cutout and folded drawing, scan, Photoshop; entwined space of modular pieces made out of watercolor strips, metal wire; mounted on card stock.

Drawing exercise 11 (week 1). Concrete thoughts: A weighty line drawing.

Architectural representation is often regarded as a primarily visual phenomena, but it is also eminently a tactile and haptic phenomena.[13] Drawings are things in their own right and have an analogical relation with the process of making and constructing. Reflecting on the origin of the concept of line weights students create a skeleton of a drawing-using physical lines that have weight such as rope lines, metal lines, wood lines, paper lines, etc.[14] Working through Gaston Bachelard's idea of material imagination, students investigate 'lines' as the entwined constructs of material and culture that originate geometry and the sensorial quality of ambiance, asking to conceive a space for their own creativity through the fictional remodeling of the studio spaces at the school.[15] Lines in drawings stand in anagogical relationship with the objects and ideas they evoke. They carry information about geometry and materiality, as well as cultural significance. The material imagination is contrasted with Cartesian geometry, which is thin to the point of having no dimensions.[16] This exercise is meant to connect with the power of drawing as an instrument to generate concrete thoughts, and not simply illustrations of architecture.

Multimedia exercise A (week 1). Cyanotype Traces of Time.

A photogram traces the points of contact where each element of a three-dimensional model of a labyrinth-like space is anchored to the ground.[17] The sun gives orthographic lightweight presence to the three dimensional weighty line drawing in the medium of cyanotype on watercolor paper. The blueprint is a track drawing produced without the use of hands, or drawn lines, and created by the brush pencil of sunlight. The points of contact of the model with the paper will cause it to remain white, while other parts of the model will cast a shadow, thus registering various tones and recording the three dimensional presence of the model on the paper. The models reveal the passage of time through

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[13] Pallasma 2012: 28-32.
[14] Butler & de Zegher 2010: 21-50.
[15] For an analysis of the architecture building where the studio space is located see Fontein 2000: 50-59. Frascari 2017: 3-7, 53-56, 104.
[16] Bachelard 1983: 22. Bachelard 1994: XIII, 23, 102. See Goffi's introduction in Frascari 2017: 10-20. Mindrup 2016: 1-6.
[17] Borges 2007.

the movement of casted shadows. A photograph of the model is digitally converted to a grey scale, inverted, and printed onto a transparent film. The image on the film undergoes the blue print process. The photograph and cyanotype paper are in direct contact transmediating information. The reversed spatial alternation allows the eye to wander through the transformations and the construction of visionary forms (Fig. 4, 5).
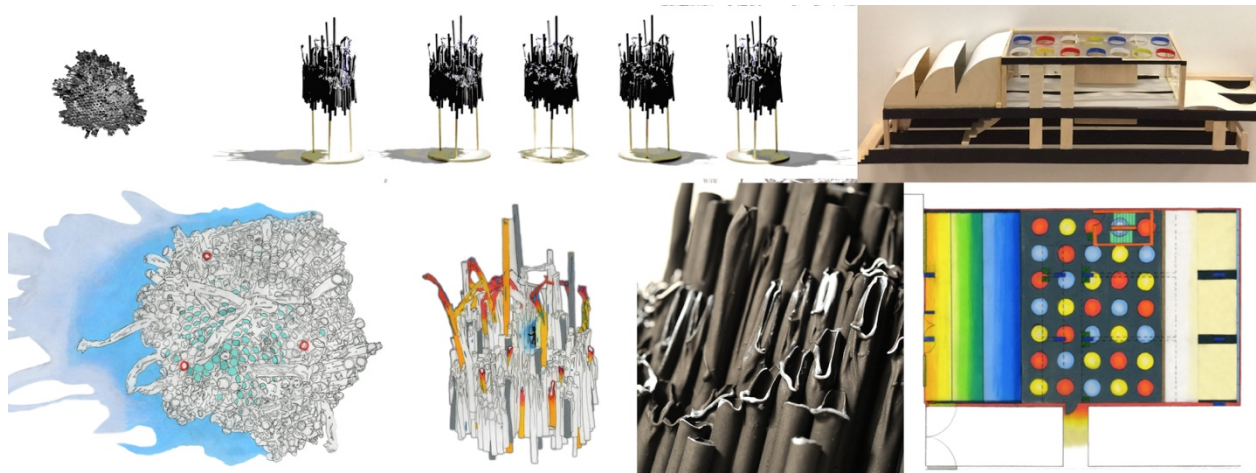

Fig. 4 © Courtesy of David Bastien-Allard. From left to right, top to bottom: plastic tubing, and acrylic paint labyrinth; colorful studio section in balsa wood, plexiglass and folded paper, inspired by James Turrel's work and the first year studio at Carleton University; hand draw plan/footprint of the labyrinth on Mylar, where colors create a relationship between emotions and architecture; plan of the colorful studio on Mylar.

Drawing Exercise 8 (week 4) Recto / Verso Envisioning: The Footprint and the Plan.

A skeleton made by one-hundred and eleven weighty lines (pasta, string, metal, paper, balsa, etc.) defines a labyrinth like place, with the use of at least three line weights, determined by the thickness. The labyrinth-like three dimensional drawing was recorded on a blueprint as a horizontal projection of lines, points of contact, and casted shadows, thus becoming a track-drawing (Multimedia Exercise A). Placing the sticks drawing on the contact paper mimics the grounding of the labyrinth on the site generating a one to one transmedial footprint. Shadows are casted in real time on the supporting medium. Through a recto/verso drawing in the medium of Mylar students experience the three dimensionality of orthographic projections, which is conceived as a thick presence, rather than a two-dimensional slice of space. The footprint is traced on one side of the mylar by marking the points of contact of the model with the ground and drawing the casted shadows; while on the other side a significant horizontal plan is drawn. The thickness of the mylar is analogous to the thickness of real space. Footprint and plan lay on the two sides of a recto/verso condition.[18] The flipping of the paper from one side to the other is equivalent to inverting the direction from which one is looking.
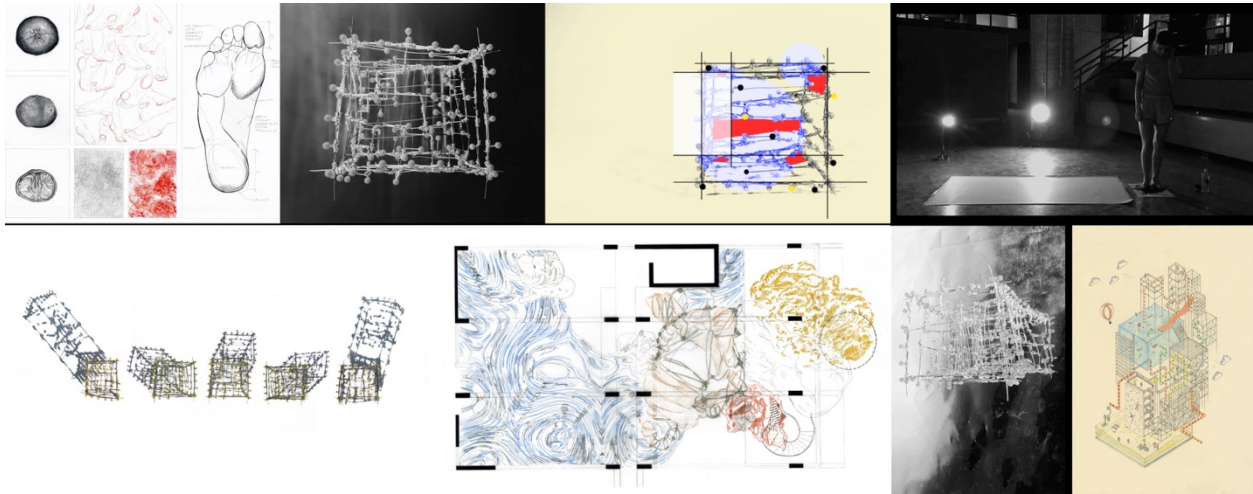
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[18] Frascari 2011: 169-174.

Fig. 5 © Courtesy of Odessa Boehm. From left to right, top to bottom: Orange Happy Feet in graphite pencil, chalk pastel and pencil crayon on Bristol paper; labyrinth cube photo negative printed on transparency paper; De Stijl Labyrinth cube photography with Photoshop editing; electric feel tash sultana cover, contemporary improvisation dance; labyrinth cube in the sun, photographed and edited in Photoshop; Dali on the ceiling with mixed media on Mylar; labyrinth cube reflections through photography; playground daydream with mixed media on card.

Multimedia Exercise B (week 4). Shreds of Transmedial Time.

A hand drawn perspectival image of the labyrinth like space is reduced to thin strips using a paper shredder. A weighty-paper-lines-drawing is created from the lost drawing. The original strips of paper are placed between layers of transparent film revealing dynamic configurations through an exploration of geometries in real time, forming and deforming the memory of the model through a projective imagination. By layering paper lines in between layers of acetate, the shreds of time construct a three-dimensional collage suggestive of an architectural space.

Drawing Exercise 6 (week 6). Drawing-out of the FLAT-land.[19]

Building on Antonio Averulino Filarete's notion of *"disegno rilevato"* (relief drawing) students build a relief sectional drawing,[20] based on the architecture building survey. Students develop a story-line for the design of a space for an artist in residence. The relief-section is either built-up in layers using thick paper, balsa wood, MDF, or it can be constructed by cutting into the sectional cardstock-drawing. Peeling off superficial layers of paper and executing cutouts through one, or more layers, allows to reveal strata below the surface and add fine details. Students consider the ambiguities of drawing as a model, and models as drawings. Minimal renderings and real shadows convey depth in the three-dimensional drawing-model.

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[19] Abbot 1884.
[20] Filarete 1972: 40.

Multimedia Exercise C (week 6). Scanning for Time Deformations.

Transforming known mediums brings out unseen properties and unexpected results. A three-dimensional graphite on Strathmore paper drawing is cut into, bent and folded. The drawing is placed inside the scanner and moved at different speeds to create a morphed image. The results are recorded and transformed in Photoshop, through the alteration of colors and contrast applied to the images. The scanner is brought into question as a tool in terms of its internal properties, uses, limitations and creative misuses.

Drawing Exercise 1 (weeks 10 & 11). First Details.

During the last few weeks of the semester the students explore the role of details as generators.[21] A series of explorations question the modularity and dimensions that are generated by the metric and the foot and inch systems.[22] Proportional and dimensional systems are compared to each other. Students explore poietic performance drawings, recording movements and defining meaningful dimensions and spatial experiences, with their own bodies.[23] The anthropoietic drawings transmediate in the design of details such as ceilings, walls, apertures and thresholds.

Multimedia Exercise D (weeks 10 & 11). Metamorphic Video Time-Lapses.

After reading Kafka's *Metamorphosis* the semester work is reconceived in reverse through a one-minute video that provides a narrative about the experience of transmediality.[24] The film sets drawings, models and photographs in motion, to serendipitously appreciate the speed of drawing as the act of imaginative discoveries. Working with the concept of time-lapses students discover techniques that enable to emphasize the temporal and material properties of their drawings and models. The compression (fast motion) and expansion (slow motion) of time is used to enhance the narrative impact of their experiences.

Drawing to a Beginning

Architectural drawings are understood either as art objects, illustrations of *as finished* architecture, or as the embodiment of an imaginative process, which may lead to the construction of a building. Through transmediality, drawings and models are not seen as left overs of a process of making, and begin to form a continuity with the act of building in the future. Mindful of transmediation beginning design students realize the power of media in generating and codifying ideas (Fig.6).

Economy of information draws attention to the agility of drawing in the expression of concrete-thoughts leading to the appreciation of the real speed of transmedial represenation that generates prolific intuitions through making. Economy of information is an overlooked and under researched quality of architectural representation. It follows an opposite strategy to that of a theoretically infinite repository of information that produces the scarcity of time in the accumulation of drawn-data, pressuring the digital-hand to find real-time drawing speed. In contemporary practice more time is

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[21] Frascari 1984: 22-37. Koolhaas 2014.
[22] Emmons 2005: 227-235.
[23] This exercise is inspired by Tony Orrico's Penwald drawings, http://tonyorrico.com/penwald-drawings/ (accessed on March 2, 2018).
[24] Kafka 1972.

spent with fewer mediums, which are often predominantly digital, to create a large number of drawings.

The concept of translation discussed in the work of Robin Evans, where a gap exists between drawing and building, only results in a condition of transmediality,[25] when change takes over the medium from one moment to another through a process of making. This process entails more than the seamless imparting of instructions. Transmediality is a process of forming/deforming through changes in media in an omnidirectional way. The awareness of transmediality fosters a capacity to choose and alternate mediums to discover ideas, rather than merely illustrate them.

Shifts from hand drawing to computer drawing; physical modelling to digital modelling and fabrication, and all other possible combinations that may derive, are essential to a transmedial discovery of the project and to maintain a gap between representations, which is a vital element of design imagination. The converse condition - using one dominant media – results in a static dwelling in a chosen form of representation. Recognizing the need for transmediality, is an attempt to keep the design process open to the imagination up to the time of construction and beyond.
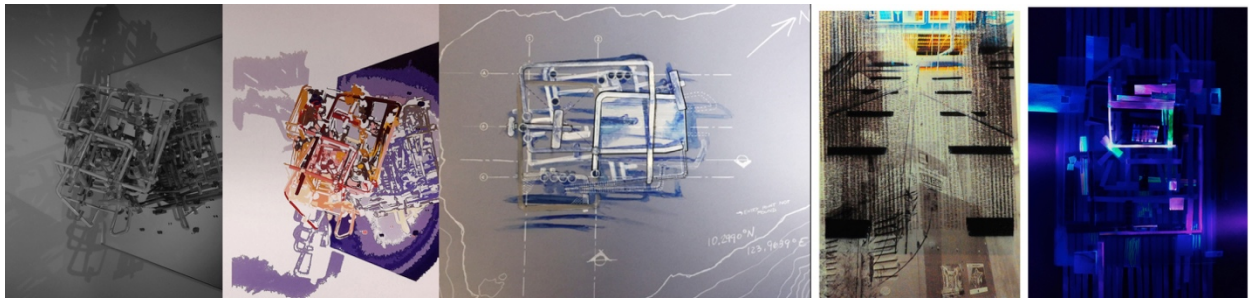
Fig. 6 © Courtesy of Red Narvasa. From left to right: Straws, mirror and colored water reflections; De Stijl- style reflections in Photoshop; "Unknown location in Mylar, pens, pencil and colored pencils; "2049" layered in transparency films; deep sea in layers of cyanotype cut in strips, markers, UV light, transparency films.

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