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1. Introduction

Material in Omer Arbel Office (OAO) is more than duality of subject and object, quantum mechanics, and even go beyond vibrant matter (Bennett, 2020). They start with "scaleless and functionless" (Arbel with Dezeen, 2019) prototypes to gain the appropriate epistemology about the intrinsic properties in materials. Instead of proofing the beginning of existence, the practices of Omer Arbel reveal the contingency in intrinsic properties and matter transformation from analog prototypes to scientific research, that they named their works in egalitarian way. Empirical research and development process results in fusion of resolute substance in sense of softness, which also subverts conceptual possibilities of assemblage of matters, meaning material itself and human intervention. Based on Vibrant Matter, the question about how far can material work on its own without human intervention and is to be investigated in practice of OAO.

2. Theoretical background

Continuity of matter

According to seven planes of solar system (Bailey, 1973), difference from mineral to human is the consciousness in distinguishing difference from one another. Simply from mirror reflection, human is able to distinguish ourselves to others, which also related to the separation of mind and physical body suggested by dialectic philosophers; In new age cosmology (Rudd, 2013), everything is manifested from the invisible higher dimension and focus on individual whole as ultimately work for the planetary whole. In this vibration and assemblage sense, it is evolving in relation to the neo-vitalism.

Vitalism differentiates itself from panpsychism that everything comes with vitality, but not necessarily be mind-like quality or the unsolved consciousness in philosophy. Vitalism posited itself in rather *juxtaposition with respect* to matter (Miller, 2005), instead of applying god/spirit in a dialectic hierarchical sense. Given the rise of intensity of matter (Syutkin, 2019), the relationship between nonhuman and human is wrapped up by the distinction in intensity of flow of matter, on the ground that every matter contains vitality.

According to Bennett, matter is more of the difference in degree of vitality in terms of Epicureans. According to Odradek, nonorganic life is impersonal form of vitality that dissolved the duality between inert matter and vital life and connect human in the manner of Deleuzian Vladimir Ivanovich Vernadsky's "continuity of things" (Bennet, 2010, Force Of Things). In addition, Adrian Johnston (Syutkin, 2019) regards matter as active participant and itself as a whole and to co-create

the outer whole with others, which also responded to the new age theories from the beginning.

Considering vitality, the will within the active participants - material and human, exists in its own way of living within the matter invisibly, which human impose great curiosity to visualise the unknown and unexplained immateriality into real object physically (Christopher, 2019).

Force within and outside matter

Matter, material itself, contains certain level of vitality, yet the intrinsic composition may not be entirely natural. Both 75.9 and 113 projects, concrete, glass and copper are in fact man-made with natural minerals, yet they reveal geometrical formation within themselves.

Atomic swerve exists as lively intrinsic property to materiality, neither a heterogeneous force was being imported to the physics nor dialectical spiritualisation. That rejected the need of injecting Kant's Bildungstrieb to dead matter (Bennett, 2010, Neither Vitalism Nor Mechanism) or the dualism between subject and object. As matter itself contains different level of vitality within and is more than merely causality of machine with its self-organising nature referring to Manuel De Landa (Bennett, 2010, Force Of Things).

Material are self-determined in choosing options from within towards formation refer to Driesch's directing Entelechy and remain unpredictable when new is yet to overflow the present refer to the self-organising evolution of Bergson's Elan Vital (Bennett, 2010, Neither Vitalism Nor Mechanism). Apart from the above drivers of form, material goes beyond itself in indeterminacy and possibilities emerges with Lucretius's "out side" (Bennett, 2010, Force Of Things). In some sense, infinite variation within material requires certain technical determinacy to be revealed, but not entirely passive to other matters nor in the sense of summon (Gottlieb, 2022).

Assemblage opens possibilities yet implies inexpectancy

Arbel treats all material and human as living matter, to discover and investigate in empirical way, however does not acknowledge that human equals to material, sometimes even regard materials may work even more than human with human as more a helper than determinator. The thing-power, when indeterminacy in material transformation from within are connected to the freewill and consciousness of human, uncontrollable or strange events may compose in sense of, geometrical and unjustified unpleasant (Nabokov, 2004) - the uncanny (Freud, 1925) and the nature of deterministic randomness - chaos (Ostrowick, 2015), which materiality and immateriality within materials are visualised by human through diverse experience as in different role during the ongoing fabrication and performance process. At the end of the day, everything are from own mini manifestation and echo with thing-power of themselves for the planetary whole, as an assemblage towards possibilities.

3. 75.9 (Arbel, 2021, P.84 - 99)



Figure 1. Construction of 75.9

The 75.9 project started with the critique towards conventional concrete constructions. Considering concrete as the second-most-used material with one of the most dreadful carbon emission on the planet, OAO worked with structural engineer to reinvent a geographical yet aesthetic language in concrete construction and the power distribution system with Zinc8 (“The Sacred Moment for Zinc8,” 2020).

With intention to seamlessly connect interior and exterior without ruining the landscape, 75.9 (located Surrey in Canada) project was built in sense of environmental intervention in archeological topography, with facades in simultaneous expansing form to the hay field, several columnar trees to for sequence of interior and horizontal glass to break the visionary boundary (“Material Masters: Glass Is More With Mies Van Der Rohe,” 2014).

It is obvious that designer/ artist from the architectural background were expected to create universal solution that inherent in “truth-to-materials” or “form follows function”. Neither as a dialectic tastemaker or a form-giver, Omer Arbel invented a subconscious and geometrical language of mass customisation, in which formations are direct consequences of mechanical, physical, chemical processes in calculated place. Scientists are often result-driven by assigning goals to molecule to achieve and exploring ways to make molecule, whilst OAO’s aesthetic goal comes first as to uncover the nature of material in response to different impetus and grant matter a degree of agency for its own formation regarding its self-organising nature.

According to Henry Cole, conventional objects are often lying with the estrangement from their

original intention. Rooted in every stages of Omer Arbel workings, material should be used appropriately without hiding their beautiful nature, meaning that substance should not be implied with qualities other than themselves and within that influence the project they participate and create. At the mean time, OAO is an expert in marrying seemingly opposite agents, the duality of materiality, and create object with consciousness as companions that the material can't do itself and result in unrepeatable gestures.

In house of 75.9, concrete and fabric are chosen as the medium of composition thanks to the continuous material explorations dating back to 2014, 62 - the proposal of renovating a century-old wood apartment on top of a grocery store, in the sense that it is never a waste about working with time instead of against it (Guin, 1974). The monumental organic form was constructed by *empirical prototypes* to understand the molecular transformation of concrete. With the largest possibility of fundamental transformation including those "out-side" factors and the least unexpected externalities cause by other matters, the least amount of prior manipulation achieved in repetitive experiments is to secure certain level of consistency of control without limiting the potential formation of material themselves. Put it simple, it is about the *delicacy between chance of matter itself and human control*.

Matter itself and Fabrication process

Matter, concrete comes with solidity, permanence, strength, liquidity and plasticity, while fabric indicates delicacy and softness in most of the settings. Moreover, the prevailing temperature and humidity, exact mix of concrete, tautness of fabric, physical action of operators are the forces within the matter and participants of the fabrication that over almost a decade of investigation.



Figure 2. Fabrication of 75.9

Given breathable fabric formwork to retain the plasticity of concrete, OAO acknowledged the nature of materials themselves to achieve rich texture and geometry form in certain unpredictability and manipulation. Given the easily shape and moulded nature of the two, the fabrication starts with deploying and erecting plywood ribs and stainless steel stabiliser back and forth to house the pour. Perforations in weave of fabric release air and water throughout the process and curing rate of concrete is calculated to reduce weight pressure at architectural level and avoid cold joints via slowly continuous pouring and solidifying process throughout 28 - 90 days. The process ends up as 14 - 30 feet tall trumpet pillars with slender base and large rectangular rooftop, and finalise with waterproof drainage mat and landscape fabric to soil actual tree on the top.

Although it is undeniable that concrete itself is a mineral admixtures, some properties within the mixture are outlined in production (Tokyay, 2018). The intrinsic properties of materials themselves are infused and synergised throughout the entire process as the major drivers for the lily pad form, given the reverence for concrete itself finding the way out of infinite possible outcomes in molecule level and to organise itself within the breathable fabric form during the pour referring to Driesch's Entelechy. Highlighting the tension between the concrete pour and fabric, the connection between the matters co-create the possibility of materiality with results from experimental exploration.

Every single part of the process is an active matter that pulsing with life, some are highly controlled to specificity, while others remain intentionally loose to encourage unpredictability and chance to contingency in the impersonal form, but none are completely passive to another or as a subject of another (Bennett, 2020, p. 112-113). To be specific, Bergon's Elan Vital of 75.9, formation of concrete is not entirely predictable and never pre-existed before the actual pouring and curing occurred during the process and start emerging itself from a second to another to gently lay off the entire weight to the thin stem. According to Bennett, it is rather a "render manifest" that matter manifest themselves through the given language invented by OAO, but not entirely or necessarily controlled by human participation.



Cross-Section Performance - 75.10

75.10 is the continuity of 75.9 in performance quality, as a never finished space to highlight the constantly evolving experience in every visit. Performance section of 75.9 kicked off with the Casting Commencement, a closed door event in advanced to preparing the bread-slices-like dissection of concrete columns for the "Particles for the Built World" exhibition in the world architectural festival 2019.

Figure 3. 75.10 Casting Commencement

Matter transformation is more than mechanics

The major focus of the session is the epiphany of actual moment when practitioner cut the concrete column into ring-shaped slices as to reveal their subconscious geometry from within. Instead of a self-expression of matter, 75.10 is more like a self-exemplification of the process that depicting the way of thinking of material and resistance within the vitality of one another. Before cutting, column itself is just a muted secondary operation that we can never fully understand how the forms built themselves. Through the act of destruction conducted by human, the entire inner universe was uncovered in an x-ray vision and allow a viewer visually access and understand about the complexity of formation, which also responded to the trajectory of architecture that the single prototype remains forever and never get to refinement. According to Lucretius, the cross sections speak for itself loudly about the chanciness and vitality lie within, as to the direct viewer's sensory and imagination to its thing-power. Arbel described the action as a divine moment of abstract idea into actual object and acknowledge that the moment when all possibilities from within collapse into one artefact, the merging point of Elan Vital and directing Entelechy in terms of physic-chemical propensities and not the dialectic divine force.

Apart from the vitality within material itself and practitioner's manipulation during the fabrication process, audience as an unknown matter to material is invited to the performance that reveal immateriality of matters without changing the column physically. Human implies tremendous impact with individual interpretation based on their own experience and knowledge. When the view is shared, another immateriality is created within the viewer and the conversation produced by the exhibition is then connected to another flow of vitality, which they assemble as a conceptual universe that is invisible yet exist in reality and impose an eternity for the concrete slices. With also documentations of the construction, picture of duality, intersection and process can then be reimagined outside the house itself with physical sense of space as vacuum and devoid of matter.

The feeling of uncanny

Concrete structure itself is vulnerable with its enormous weight resting on the tiny stem. There is form of feeling of uncanny towards such aggressive form, which remains unjustified whether it is out of the fear of natural disaster, texture of concrete and scale of concrete, unordinary setting of home or simply the creation itself. The assemblage between structural engineers and OAO team, the mixture of concrete and the fabrication process itself responded directly to the fear towards uncontrollable natural factor, yet as a essential examination in architectural projects, like earthquake. OAO developed the fabrication technique with structural engineers and revealed the entire process with the architectural industry as to create another possibilities out of conventional building limitations. Conventional way of construction would have spall the second pour of concrete when the first was curing. Instead of an entirely new method of construction, 75.9 is the direct consequences of thorough empirical experiments based on the goal in discovery of material properties, instead of a goal to create something out from the material and result in a radical form of matter formation.



Figure 4. 75.10 Exhibition

It is undeniable that there are compromises during the process with the political nature as an architectural project. The concrete columnar is not as radical as it could be in terms of taking up the entire house and so as every other matter constructed in the project. In fact, architecture is vastly more complex exercise than a single column, a piece of artwork from an artist, in terms of number of people, the tremendous unpredictability and chanciness of chaos are multiplied. Therefore, 75.9 is undoubtedly a more conservative structure in compare with 75.10 in terms of risk taking in the name of counterbalance of the architectural compromises.

At the end of the day, in terms of the seemingly mutually exclusive cosmic tendencies, the entire universe of 75.9 and 75.10 is rather using natural science as a mean to discover the vitality from within matter themselves and lean towards molecular order geometrically.

4. 113 (Arbel, 2021, P.153 - 159)

Regarding the material experiment conducted with Bocci, the open performance itself is an exploration in highlighting the inter-exchanging vitality between matters. Instead of revealing the power within concrete and striving to match the curing and setting rate of the two materials in 75.9, 113 is more like exploring the synergy between matters, including copper, glass and human, and embrace the unexpected yet planned chaos rise from the different cooling and forming rate of the two materials.

Matter itself

Given decades of mechanical and molecular experiments in glass by Bocci and in copper by OAO, the coefficient of expansion of the two materials are intended to set in an opposite position to conventional scenario.

Matter, glass itself comes with fragility when formed, the feeling of sublime with its transparency in contrast to human body, being stiff inside and soft outside with liquidity when heat implies, sharp edges and smooth surface (Watkins-Baker, 2010). Secondly, matter, copper mixture itself comes with sturdiness, colour difference when formed due to oxidisation, prickly edges and texturised surface. Each molecule in the two materials is an independent collaborator with nature as a whole cosmic substance, the molecules are then brought together and render manifest through human intervention, as to transform themselves physically and immaterially into another level of cosmos flow without necessarily human as the only determinator.



Figure 5. 113 Performance

Fabrication process and human intervention

In the first stage, glass vase is mouth blown and highly depend on the glassblower. Glass tube is heat and expand with air to form a bubble as the base, follow by shaping with tools and adjusting size by attaching to another type of glass in the furnace. With organic shape and opening of the glass as the major part of the next stage, thickness and the size of form is then reheat and determined with several expansion by blowing and constriction by water. A sharp knock is then intended to separate from one pipe to another and follow by reheating the opening to finalise the glass vase.

In the second stage, copper is melting all the way when first stage is on-going, molten metal is then pour in a water-like consistency and slowly coat and fuse the interior of glass vessel with the rapid sequence of actions determined by the glassblower who titled the glass vase upward.
The result of the first and second stage is mostly depend on the decision and observation of the practitioner, in which matter comes in an active state while being passive to human intervention, yet more than mechanic with the certain freedom of formation and remains its tension within to hold itself in the form made.

In the third stage, while the piece is still hot, materials briefly fuse and create sharp contrast between iridescent surface of exterior glass mating side and black textured surface on oxidised interior side. The piece is then set aside on sand to cool down to room temperature, and human has no more intervention at this stage. The different cooling rates between the materials eventually cause inevitable shattering of glass and separate the metal body from the negative form of glass to determine the final outcome. Result in a delicate and thin body with prickly prickly top edges with jagged protrusions ready to snap off. Shed trail of the metal piece flakes while moving, yet being sturdy and confidently to hold the form.



Figure 6. 113 The Chapel

Matter transformation is more than mechanics

The process of 113 is a direct documentary of actions performed by glassblowers, the chemistry and formation of materials and specific contingencies of the moment of making. The shattered glass is reborn in an ephemeral nature as a negative form in metal. In Christian dialectical traditions, intensive singularities reborn as new organisation is related to the feeling of uncanny and disorder of formation, when glass shattered suddenly and when people see OAO works as the opposite of generally known aesthetics. Additionally, the shattered glass is also the transcendent mission of design to give birth to new realities according to Enric Miralles, the Spanish architect that Arbel worked as an intern after his graduation from architectural school.

Without the shattered glass, the form of copper mix in terms of shape and texturised surface would not be finalised. In terms of mechanical matter transformation, the surface of the copper piece starts ever changing with its nature of patina reaction to air and humidity, when shattering glass has change it state from physical form of vase into invisible form of shocking in the mind of audience. The piece is then finally being carried to the chapel to share the divine moment of matter transformation together with the other raw materials that yet to be used and already fabricated during the period of performance.

Chaos is a form of possibilities



Figure 7. 113

Human as an agency to help foster to process and work together as a team to make things happen in each single step. Glassblower as one of the most important agencies to give performance, to power glass to retain in certain form with the help of heat, air, water, gravity and other members. The creativity exists in both glassblower and glass that remains unpredictable until its actually made. Glassblower contributes their skills and experience in the field to determine the timing and power to foster glass forming procedure, in which material is more than mechanic when human intervene the procedure of formation. However, in 113, human cannot be regard entirely as an external force of the matter formation with its high determinacy during the process.

When individual pieces come with individual mixture of matters, there is always possibility of chaos, that things do not necessarily go as wished. The possibility of shape and outcome depends on the material itself with its own undetermined forces and certain determinacy with human.

In this chaos sense, everything seems to be but not necessarily in a straight casual relationship. When molten metal threw up while pouring into the glass vase due to partial cracks of the vase, the immediate reaction of practitioners and the audience are part of the assemblage that synergise as an

unintentional out-side force to the fabrication process. In terms of quantum mechanics (Ostrowick, 2015), there are intention implied in every options of human intervention, which is possible to influence decision making abilities that may cause unexpected flail. Practitioners as part of the chaos, one immediately adjusted the glass to another direction and continue to the process to prevent the molten copper leaking from the cracked hole.

Each step as a whole of itself and ultimately goes together to formation as another whole, in which unexpected immateriality are also part of the assemblage, in addition to the directing mechanic tension lies in the material fluid and driving force of the ultimate piece and further possibilities. Reaction of audience perform as the signal to other practitioners to clean up the space immediately to prevent any extra accidents and allow the one continue her pouring process, while also comforting her emotion and bringing the case to all. Not entirely from randomness, result of inexpectancy in the name of strange attractors (Ostrowick, 2015), are new possibilities that direct OAO to rethink the parameters, and let the exploration runs again. In short, there are causal regularities with apparent randomness, yet there are strange attractors that emerge novelty, which is also a flow of vitality. If we look closely to vitality, it is not entirely random but with certain mechanic deterministic. OAO find this sense of mechanic and allow the seemingly strange attractors/ the freewill within to perform its indeterminacy within certain algorithm. All experiments gain relevance through repetition can get refinement over the process that solved the trajectory of ever-unchanging architectural prototypes.

5. Conclusion

With empirical practices in parametric and the role as a choreographer of matter, Omer Arbel is undoubtedly questioning the homogeneous industries and suggesting novelty to things perceived as abnormal, disorder, dissolving restriction and boundaries of modern production and promoting openness to chance and possibilities in the return to fundamentality of material and matter, to the vitality of every possible things, so as the discover of cosmic tendency.

Sharing the base of empirical research and development approach, 75.9 is more making use of materials each other to form a greater whole in invisible manner and immateriality being revealed by the cut in 75.10, while 113 comes with visible transformation of matters that appears to compete with individual flow of vitality, the creativity between and within themselves end up with an entire novelty in sense of uncanny. 75.9 has higher level of prior manipulation as an architectural project and less freedom of material formation in terms of the ultimate physical shape, while 113 reveals higher level of unpredictability that fabrication process as the experimental performance itself, yet remains at high level of human intervention.

Referring to the question as how far material works without human invention, the answer lies in the internal vitality and endless possibilities within and with “out-side. OAO grant matter its freedom to form itself and redetermine the identity of matter in this world of restriction and artificial production. Yet, the level of human intervention contributes from material mixture, fabrication to immateriality objectification as an assemblage opens even more possibilities in a visible and physical way and to vibrate in cosmic flow as a whole.

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