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THE DISRUPTIVE FLUIDITY AND UBIQUITY: CREATIVITY IN THE WORLD OF IN-BETWEENNESS

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Abstract:
Fluidity and ubiquity are two fundamental principles of our contemporary world, representing new ways of perceiving, thinking, experiencing, organising, and creating various aspects of our present world. These principles have radically transformed models of economic exchanges, industrial production, social relations, cultural representations, and aesthetic expressions. Fluidity serves as a philosophical antithesis to the modern rigid, stratified, and binary worldview, celebrating a fluid, non-stratified, and non-binary perspective driven by dynamic flow, flux, and connectivity. On the other hand, ubiquity defines our present world of objects, which are created through augmented and mixed reality, giving them the property of being present anywhere and everywhere. Both fluidity and ubiquity serve as contemporary models for generating disruptive ideas, forms, styles, products, organisations, and systems. Fluidity represents the fluid-creative organisation of physical, social, cultural, and aesthetic elements, independent of binary structures, while ubiquity represents the transformation of objects from the virtual to the trans-material.

Keywords:
fluidity • *ubiquity* • *digital network* • *multiplicity* • *disruption* • *non-binary relation* • *trans-materiality*

Introduction

Fluidity and ubiquity represent two pivotal principles in our contemporary world, ushering in fresh perspectives, cognitive approaches, perceptions, experiences, organisational methods, and creative avenues across various facets of it. These principles have transformed the way we organise and perform our social, economic, political and cultural life, the way we create our arts and produce our objects. Both principles propel our contemporary world into a new world unimaginable before, though in different ways. On the one hand, fluidity has philosophically redefined our modern worldview, transgressing the more rigid outlook of the past. On the other hand, although ubiquity is also one of the central concepts in contemporary philosophical thought, the discourse about it is inseparable from the development of advanced information and digital technology, which have fundamentally changed our relation to everyday objects.

In the realm of philosophy, the concept of fluidity serves as a stark contrast to the rigid worldview that categorises the world through strict and unyielding boundaries of binary opposites or dichotomies. This perspective operates on binary logic, where everything is classified as either 'A' or 'not A', existence or non-existence, with the first term holding dominance and the second considered inferior (Canters and Jantzen, 2005:16). From a subjective standpoint, rigidity entails an imbalanced relationship between the 'subject' and the 'object', where the subject exercises complete control over the object. Conversely, fluidity becomes a dominant worldview that emphasises interactive and productive exchanges among subjects, fostering mutual relationships between individuals, actions, practices, spaces, materials, and ideas in diverse and manifold ways. This worldview emerges through dynamic, constructive, and adaptable negotiations, dialogues, and shared experiences among various subjectivities, rooted in concepts such as co-belonging, relational existence, medians, and in-betweens.

The defining characteristic of our modern world is the widespread presence of objects, a phenomenon that has emerged with the transition from a virtual reality-centric era to the more complex domain of augmented and mixed reality. Ubiquity represents the interconnectedness of objects through computer systems, spanning various scales and

encompassing both tangible and intangible elements. This results in the capacity for objects to exist virtually anywhere and everywhere, enabled by the technical capability to continually link all entities (Weiser and Brown, 1997:78; Hansen, 2012:63-88). The advance of Artificial Intelligence (AI) has made possible for the AI ". . . uses algorithms within machines and focuses on giving them cognitive abilities such as reasoning, problem-solving, decision-making, and recognition" (Fares and Jammal, 2023:234). Here, there are two types of AI, based on its capacity. First, a weak or narrow AI, as an intelligent system trained to perform and repeat observed behaviours and assigned tasks. Second, strong AI, as AI that has a sense of human-like consciousness, which has the ability to reason and think (Flasiński, 2016:6; Fares and Jammal, 2023:235).

The concept of ubiquity is propelled by the progression of *ubiquitous computing*, which utilises two distinct categories of technology and their applications. The first category consists of industrial or embedded technologies, which remain mostly inconspicuous and are primarily accessible to experts. Examples of such technologies include smart buildings, enhanced environments, and communication networks. The second category includes consumer products, where ubiquity is highly visible and becomes a prominent aspect of the foreground environment, encompassing items like smartphones, wristwatches, kitchen appliances, and fashion accessories (Penny, 2012:267). What matters in ubiquitous computing is not technology itself, but its relations to us. This relation is characterised by the principles of invisibility, calmness and connectivity. It is, by definition, *"invisible to perceptual consciousness."* This is why this type of computer is called *calm technology*. Through this technology we can imagine ". . .an everyday world in which technology pervades our bodies and environments and is embedded in even the most ordinary experiences (Veel, 2012:120).

From a Rigid to a Fluid World

Rigidity and fluidity are concepts that involve the function of lines in defining the borders of things. There are two primary functions of lines here. Firstly, there is the *dividing line* that limits a certain area or territory,

providing a boundary, screen, fence, barrier, or partition between two areas. It could be a border line that divides something into parts, whether concrete or abstract, material or non-material, real or virtual. Secondly, there is a *connecting line* that links two points, locations, places, or areas, which can take the form of a rope, road, path, groove, or connection. These two types of lines work in various ways and forms. There is a line that functions to separate the world into segments, known as *segmentation lines* (Deleuze and Guattari, 1987:3-9). According to Deleuze and Guattari, there are three types of segmentation. First, there is *binary segmentation*, which defines an asymmetrical-opposite relationship between two categories: male/female, masculine/feminine, West/East, etc. Second, *circular segmentation* defines the circle of affiliation, encompassing relationships in a household, neighbourhood, sub-district, city, district, province, country, regional area, or the world. Third, *linear segmentation* follows a linear progression, with each segment representing an episode or history: education in the family, at school, during military service/pre-service, at work, etc. (Deleuze and Guattari, 1987:212).

One type of dividing line is a border separating two places, areas or territorial. According to Michaelsen and Johnson, there are two kinds of border. First, there is a *hard border*, which includes cement trenches, chain-link fences, uniforms, binoculars, and steel walls. Second, there is a soft border that includes nationalisms, cultural essentialisms, and multiculturalisms. The idea of the "border" or "borderlands" has also been expanded to include nearly every psychic, cultural or geographic space about which one can thematize problems of boundary or limit (Michaelsen and Johnson, 1997:2). According to Julia Kristeva, physical, psychical and social worlds also have a kind of relatively rigid borderlines or margins separating different physical, psychic or social worlds. These borderlines or margins separating clean and dirty, holy and unholy, sacred and profane, order and disorder, being and non-being, life and death, form and formlessness, purity and impurity (Kristeva, 1982:7).

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there is a *soft border* that includes nationalisms, cultural essentialisms, and multiculturalisms. The concept of the "border" or "borderlands" has also been expanded to encompass nearly every psychic, cultural, or geographic space in which one can address issues of boundaries or limits (Michaelsen and Johnson, 1997:2). As argued by Kristeva, physical, psychological, and social worlds also possess relatively rigid borderlines or margins that separate different physical, psychological, or social realms. These borderlines or margins separate the clean from the dirty, the holy from the unholy, the sacred from the profane, order from disorder, being from non-being, life from death, form from formlessness, and purity from impurity (Kristeva, 1982:185).

Based on its nature, there are two kinds of dividing lines. First, there is *rigid segmentation*, which divides the world in a strict, firm, and intolerant manner when generating forms, systems, and structures within the world. The scientific analogy for this model of segmentation is akin to the 'mechanics of solids', reflecting a Newtonian view of the world, which, as Stephen Toulmin (1992) puts it, "called for stable institutions, unambiguous class structure, centralised power, and defence of the state's sovereign autonomy from external interference" (p. 194). Deleuze and Guattari employ a spatial analogy, the "molar line", to describe a rigid divider that categorises various entities, such as space, fields, societies, forms, and concepts, in a strict and inflexible manner, particularly through a model of 'binary opposition.' It divides fields, spaces, objects, genders, races, ethnicities, concepts, and ideologies rigidly and with fixity (Deleuze and Guattari, 1987:213).

In regard to subjectivity, the concept of rigidity can be employed to describe the construction of the 'subject' through the process of subjectivity. The traditional construction of subjectivity, characterised by distinctions such as "one and not-one" or "A and not-A", demonstrates a way of thinking structured by rigid binaries or dichotomies. The rigid binary that defines the 'other' as the opposite of the 'one", or what the 'one' is not, is replaced by mutual respect and reciprocity. Luce Irigaray employs the metaphor of a "solid mechanic" to describe Western modernity's ideas of subjectivity, which are underpinned by binary positive and negative associations of power. This reflects the unequal

power distribution attributed to the positive male subject versus the inadequate powers of women as the object or its equivalents (i.e., 'she', 'it', or 'other'). Consequently, a woman is limited to a passive, static material form or 'object' that is dependent upon men's powers, represented by the 'masculine power' (Rawes, 2007:28). This gives rise to an asymmetrical relation of 'subject' and 'object', in which the subject is the superior term in front of the object. To illustrate this binary model of thinking, consider a cultural relation as an example:

HIGH CULTURE	MASS CULTURE
creativity	imitation
good taste	bad taste
elite	mass
substantial	banal
reflection	provocation
deep	surface
intellectuality	sensuality
knowledge	immediate effect
reason	desire

In this context, the terms in the left-hand column are considered superior to those in the right-hand column. For instance, words such as 'creativity', 'good taste', 'elite', 'substantial', 'reflection', 'deep', 'intellectuality', 'knowledge', and 'reason' are regarded as superior to their counterparts, such as 'imitation', 'bad taste', 'mass', 'banal', 'provocation', 'surface', 'sensuality', "immediate effect", and 'desire'. The logic of this column follows the rules of *"identity and sameness"* or something akin to *"either is or is not"* (Canters and Jantzen, 2005:16). Dualism between male/female, mind/senses, immortality/mortality, being/becoming can be discussed based on this binary logic. In the context of gender relations, for example, the male subject is constructed as the norm, which results in women being described as the 'not-man' and erases them as subjects in their own right. Two sexually different beings are reduced to one: the same and the 'not-same', the man and the 'not-man' (Canters & Jantzen, 2005:16).

The second model of division is *supple segmentation*, constructed upon two fundamental and interrelated concepts: fluid and flow. 'Fluidity' embodies the principles of liquid or gaseous bodies, characterised by formlessness and free movement in all directions, spreading across various spaces. According to Guattari, 'fluid' is an entity "without coordinates", lacking a definite starting or ending point. Liquids or gases, as fluids, cannot possess a definite shape due to their absence of coordinates unless they are contained within or shaped by a container. The properties of fluids render their shape uncertain, unstable, and unbounded. Fluidity serves as the antithesis to binary oppositions, dissolving the boundaries of good/bad, aesthetic/non-aesthetic, moral/immoral, or masculine/feminine. In other words, fluidity is a transparent, non-hierarchical, unpartitioned, non-binary, and unsegmented entity. Unlike solid matter, the "fluid body" lacks a definite form and organs—whether it be the human, social, political, economic, or aesthetic bodies. This fluid body is unformed, unorganised, non-stratified, or de-stratified (Deleuze and Guattari, 1987:3). Fluid lacks a definite shape because it neither fixes space nor binds time. As remarked by Bauman:

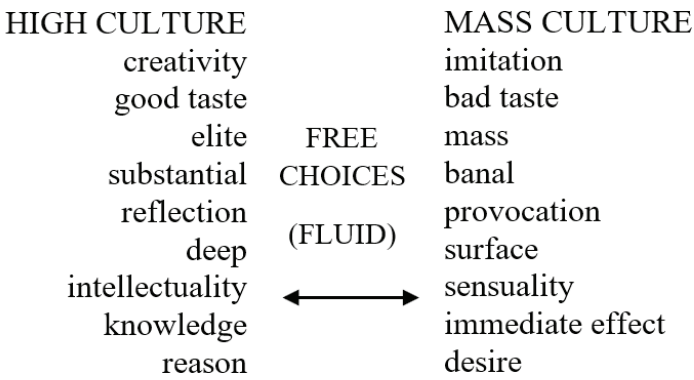
> "What all these features of fluids amount to, in simple language, is that liquids, unlike solids, cannot easily hold their shape. Fluids, so to speak, neither fix space nor bind time. While solids have clear spatial dimensions but neutralize the impact, and thus downgrade the significance, of time (effectively resist its flow or render it irrelevant), fluids do not keep to any shape for long and are constantly ready (and prone) to change it; and so for them it is the flow of time that counts, more than the space they happen to occupy: that space, after all, they fill but "for a moment". In a sense, solids cancel time; for liquids, on the contrary, it is mostly time that matters." (Bauman, 2000, p. 2)

Because it does not have a fixed space, bounded time, and definite shape, fluids travel and change easily. They '"flow', 'spill', 'run out', 'splash', 'pour over', 'leak', 'flood', 'spray', 'drip', 'seep', 'ooze'; unlike solids, they are not easily stopped - they pass around some obstacles, dissolve some others and bore or soak their way through others still" (Bauman, 2000, p. 2). This flow, spill, or splash can be easily seen on the Internet or social media, where millions of words, sounds, or images instantaneously and incessantly appear and disappear on millions of computer screens.

Nevertheless, fluids are not the negation of solids but rather their antithesis through the dilution of their rigid characteristics. Without fluids, there would be no unity because fluids always exist between solid substances, combining them, causing them to melt, and then uniting them again. Without fluid intervention, no discourse can seamlessly weave together (Irigaray, 2002:233). One of the fundamental principles of fluids is 'flow' and the flowing processes (flux). Everything in a fluid flows with a current, in an uncertain, fluctuating, turbulent, and chaotic direction, creating a multidimensional flow by itself. Because it moves in uncertain ways everywhere, fluids make it possible to uncover a new world that was previously unimaginable. This is because fluids always transcend reason, go beyond measure, and plunge into the process of undifferentiation. As also remarked by John Urry:

> "Such fluids are partially structured by the various 'scapes' of the global order, the networks of machines, technologies, organizations, texts and actors that constitute various interconnected nodes along which flows can be relayed. Global fluids travel along these various scapes, but they may escape, rather like white blood corpuscles, through the 'wall' into surrounding matter and effect unpredictable consequences upon that matter … Such fluids of diverse viscosity organize the messy power of complexity processes." (Urry, 2003:60)

Regarding fluidity, Deleuze and Guattari employ a spatial metaphor to describe the nature of fluidity: the *molecular line*. This line lacks divisions, yet it is created by connecting lines. Its position is not at the connected points but along the line that connects those points. It exists *in-between things*, in the world of medians or intermezzo. It never settles on a fixed point, position, category, or identity; instead, it moves freely, dynamically, and fluctuatively in the world of the *in-between* (Deleuze and Guattari, 1983:49). "Molecular lines" are fluid, flexible, uncertain, and multidimensional. According to Deleuze and Guattari, this line "...no longer forms a contour, and instead passes between things, between points. It belongs to a smooth space. It draws a plane that has no more dimensions than that which crosses it; therefore, the multiplicity it constitutes is no longer subordinated to the One but takes on a consistency of its own" (Deleuze and Guattari, 1997:505). To illustrate the shift in the model of thinking, consider a shift in cultural relations as an example.



By eliminating the line separating high culture and mass culture, the terms in the left-hand column are no longer considered superior to those in the right-hand column. They now have equal status in the political discourse of culture. Thus, the relation of the words 'creativity', "good taste", 'elite', 'substantial', 'reflection', 'deep', 'intellectuality', 'knowledge', and 'reason', and their counterparts 'imitation', 'bad taste', 'mass', 'banal', 'provocation', 'surface', 'sensuality', "immediate effect", and 'desire', is now seen in a more fluid and flexible ways. These concepts are now fluid.

In terms of subjectivity, fluidity disrupts the binary relations of subject-object. For instance, it challenges the binary opposition of "man and not-Man" by celebrating a "fluid language" that defies such dichotomies. This achievement is possible only through the establishment of "mutually active exchanges between subjects", which are produced out of "*subject to subject*" relations that resist linear, uni-directional thinking underpinning subject-object hierarchies. This is because any 'single' sexed subject embodies a multiplicity of different subject positions, depending upon the relationship he or she has to the other subject (Rawes, 2007, p. 29). What emerges from this is not a relationship of opposition but rather one of difference, where subjects mutually affirm each other. Fluidity does not represent an asymmetrical determination of an active 'subject' and a passive 'object' but rather a "back-and-forth flow" between subjects (Canters and Jantzen, 2005:138). The repudiation of binary logic can also be seen in Derrida's concept of *'différance'*, representing a state of

'in-betweenness' and 'undecidability' of a thing, which cannot be rigidly positioned in either point in any binary relation, in favour of the free play of difference (Derrida, 1981:27). Thus, all our discourses operate on the basis of the logic of movement in-between: between presence/absence, subject/object, rational/irrational, masculine/feminine, traditional/modern (Derrida, 1982:3-27).

Fluids are characterised by their ability to move, migrate, or transform themselves through changes in ideas, locations, materials, or techniques. Each movement yields differences or novelties, resulting in a new synthesis of elements that previously existed within their territory. Deleuze and Guattari call this specific movement 'deterritorialization', a moment when established and stable territories are shaken by external or internal elements (Deleuze and Guattari, 1994:85-86). Therefore, to deterritorialise is to free up the fixed relations that contain a body while exposing it to new organisation (Parr, 2005:66-69). Deterritorialization necessitates multiplicities of spaces and multiplicities of lines in order to be able to move, make connections, and grow. Deleuze and Guattari call this dynamic model of growth 'rhizome'. As remarked by Deleuze and Guattari, a rhizome ". . . ceaselessly establishes connections between semiotic chains, organisations of power, and circumstances relative to the arts, sciences, and social struggles" (Deleuze and Guattari, 1987:7). In the digitally connected world, a network and its connections serve as a rhizome in economic exchange, social production, cultural interaction, and the creative process.

Ubiquity and Immediacy

Fifty years of computation have changed the relations between a computer and a human subject. In the first year, the mainframe era, the relationship between people and computers was mostly controlled by elite experts. In the second era of the Personal Computer (PC), the relationship between computers and human subjects became more personal, even intimate. In the third era, often referred to as the transition era, the Internet deeply influenced the business and practice of technology, with millions of people and their information becoming interconnected. In the fourth era of ubiquitous computing (UC), the relationship is characterised

by the connection of things in the world with computation at many scales, including the microscopic. As remarked by Weiser and Brown (1997), some of these computers "...will be the hundreds we may access in the course of a few minutes of Internet browsing. Others will be embedded in walls, chairs, clothing, light switches, cars—in everything. UC is fundamentally characterised by the connection of things in the world with computation" (p. 77).

Central to ubiquitous computing is a massive transformation in how humans relate to computers. Instead of the one-person-to-one-computer relationship of the PC era, in the UC era, there are "many computers serving each person everywhere in the world" (Hansen, 2012:68). This relationship has been enabled by the development of the digital network society, characterised by the central role of digital media technology in shaping social, political, economic, and cultural life. In contrast to mass media such as television, which is a "one-to-many medium", digital information media have the character of a *"many-to-many medium"*. This means that many people interact with each other in various ways through numerous digital networks (Shaviro, 2003:7). The basic idea of ubiquitous computing is the notion that digital information technology is not constructed solely from immaterial or virtual elements. It necessitates material support, without which it cannot exist everywhere. This is the fundamental principle of 'trans-materiality', in which the immaterial requires a material thing as its carrier (Whitelaw, 2012:223).

Ubiquitous computing induces a fundamental shift in the mode of addressing and the economy of sensation in our contemporary everyday life, particularly in our perception of the visible and invisible. On the one hand, ubiquitous computing addresses us at the micro-sensory and micro-temporal levels, which are, by definition, invisible to perceptual consciousness. As remarked by Hansen (2012), we call it "ubicomp environments" precisely because they offer information peripherally, meaning: in a time frame beneath the threshold of conscious perception, and catalyse sensation according to a protocol that is not wholly biotic but is crucially and irreducibly technical' (p. 72). Although ubiquitous computing is constructed on a trans-material basis, through which material things carry immaterial or virtual elements, behind these material and immaterial aspects lies an invisible protocol that operates imperceptibly.

This concept is finally applied to ubiquitous computing. For example, its presence in contemporary media arts can be seen from the perspective of trans-material ubiquity (Whitelaw, 2012:233).

In digital networks, the presence of something in our consciousness 'transcends' the sequential-linear model of time perception. Ubiquitous computing has enabled a new model of simultaneity and omnipresence. Everything exists in a kind of 'kaleidoscope' of presence, not as fragments of presence separated by space-time but as a presence that transcends the boundaries of space-time, namely "overlapping presence" in consciousness due to the conditions of interconnectedness in communication and other interaction systems. Paul Virilio refers to this model of presence as 'tele-presence', the computer-mediated presence in a real-time model (Virilio, 1997:10). Within these systems, information flows and spreads through any network, expanding everywhere in all directions, and creating new milieus that transcend local space-time within a network of planetary hyper-connections (Terranova, 2004:2)

It is this "overlapping presence" or 'telepresence' that makes the model of simultaneity and omnipresence possible, namely the presence of things everywhere and anywhere. However, in consistency with the trans-material character of ubiquity, virtual and non-material information can only be present alongside physical-material hardware as its carrier. According to Manzerolle, in the context of media in general, 'ubiquity' "… refers to both the perceived and actual colonisation of digital media devices and, in this case, the technical capability to remain connected at all times through devices designed to be 'always on' and 'always on you'" (Manzerolle, 2014:211). The age of pervasive connectivity, characterised by personalised devices such as smartphones, wireless data connectivity, offers the potential to optimise opportunities for interactions and transactions and to gather real-time logistical data on user actions and whereabouts. Thus, in order to effectively operate in a ubiquitous connectivity environment, it is necessary to consider ubiquity, immediacy, and personalization (Manzerolle, 2014:211).

The concept of 'tele-presence' in digital networks has profoundly influenced our perception of time and space. In this context, interaction and communication within digital networks occur within a specific space-time framework, based on the model of simultaneity and omnipresence.

This model allows for the presence of anything in 'the same time' within digital media, even though they may originate from physically different places. In the model of simultaneity, acts of communication enable us to track the whereabouts of each individual in space-time because this type of communication and interaction model 'pulls' everything from its material, temporal, spatial, chronological, and historical context, consolidating it in digital-time simultaneity (Lovink, 2011:29-30). This "digital time" takes shape as soon as natural time is detached from its geographical context and relocated into an artificial time-space that transcends geography. This phenomenon is a result of "time-space compression", which reduces the time needed to explore space, thanks to recent advancements in transportation and telecommunication technologies (Harvey, 1990:260-283)

The compression of time has rendered natural territoriality no longer meaningful because the time 'now' in one territory can occur simultaneously with the time 'now' in other territories. As a result, there is nothing that can be perceived as the 'now' since it necessitates the trilogy of 'before' (past), 'present' (now), and 'after' (future). However, our perception of time is no longer based on this trilogy. Today, these three categories of time can be simultaneously integrated into 'real-time', which absorbs the 'now' into a simultaneous model of presence in real time (Virilio, 1991b:102). The compression of time has led to what Virilio calls a condition of *'picnolepsy'*, characterised by overlapping time. Picnolepsy can also refer to a high frequency of image appearances, which can lead to dizziness. In a digital network, we live in this array of high-frequency images, presenting themselves to our perception at rapid intervals through a series of moments (Virilio, 1991a:15)

As discussed previously, the development of digital-information technology has ushered in a model of time simultaneity as a result of the transition from "natural time" to "artificial time" constructed through digital-information technology. This transition involves moving from 'clock-time' to 'real-time' and from *chronos* to *kairos*. It represents a shift from "chronological time" to what Virilio calls "chronoscopic time". Chronological time is the perception of time as a moment of 'now' within an inseparable continuum of past, present, and future. In contrast, chronoscopic time is no longer constructed through a series of 'now'

moments, durations, or sequences. Instead, it is constructed through what Virilio refers to as 'exposure', a photographic term he uses to describe the process of capturing light to produce a photograph (James, 2007). This enables us to experience the simultaneity or omnipresence of times in a form of virtual time (Virilio, 1997:3-10). Chronoscopic time creates an accelerated, non-linear, non-historical, and 'cut-and-paste' world, where anyone can perceive a series of 'snapshot views' of simultaneous or omnipresent times (Hassan, 2003:5).

The compression of time through acceleration not only overcomes spatial barriers but also causes local-geographical time to disappear in a certain place, region, or state. Through the simultaneity and omnipresence of time in real-time, local chronological time is taken away from its geographical root and transformed into 'interactive time' – a time applicable to everyone beyond geography. The past, present, or future relationship of a particular local place loses its real meaning, as it now becomes real-time for everyone. Consequently, material-based events lose their geographical values as an "effective presence" through local-real audio-visual presences, replaced by 'tele-presence' – a model of presence in the simultaneous presence of time. Through simultaneity and the omnipresence of time in real-time, local chronological time is detached from its geographical roots and transformed into "interactive time" – a time that transcends geography, applicable to everyone. The past, present, or future relationship of a particular local place loses its original meaning, as it now becomes real-time for everyone (Virilio, 2005:120).

Virilio coined the term 'time-freezing' to designate the simultaneous presence of times, wherein a series of time that should pass in their linear sequences, yet now they are simultaneously present in a "technological time-space". Through the freezing of time, all parts of time – past, present, and future – are compressed to be 'present' through the removal of the meaning of sequence, duration, and its historical changes (Virilio, 1991b:13). Through the compression of time, distance is overcome by real-time. The death of natural time and distance has led to what Virilio calls "the death of geography". The concept of geography represents how different spaces, environments, and climates are tied together by a system of time differences. Consequently, we have differences in moments of

time: here/there, before/after, internal/external, near/far, etc. However, through real-time, there are no longer differences in time-space. Here, with "...the interfacing of computer terminals and video monitors, distinctions of here and there no longer mean anything" (Virilio, 1991b:13).

While speed is the result of dividing distance by the time required to traverse it, the compression of time involves mastering distance through time acceleration. Both speed and the compression of time have psychophysical effects on humans, giving rise to a phenomenon known as "time perception". 'Immediacy' is the term used to describe the time perception that arises from the compression of time. This concept holds two interconnected meanings. In its relation to space, 'immediacy' signifies a direct or real-time connection between agents from different locations. In its relation to time, immediacy represents an 'instant' – a moment that arises without delay or interval and exists simultaneously and ubiquitously. These two dimensions of speed form the foundations of our contemporary culture centred around speed and immediacy (Adams, 2014, pp. 2-4).

Immediacy can be distinguished based on its three dimensions. First, immediacy, as an idea of *cultural instantaneity*, can be identified through examples such as express postal services, omnipresence, and the immediate fulfilment of desires. This type of immediacy continuously accelerates the pace of life, as is evident in market capitalism. Second, immediacy is also an idea of *cultural immediateness* and *distancelessness*. The Latin word '*immediatus'*, which means 'inseparable', conveys not only cultural acceleration but also a new experience of 'thisness' (*haeccity*). This results from the expansion of connectedness and the increase in tensions, rushes, and urgencies in interaction, communication, consumption, and information flow. Third, there is the hegemony of a model of *telemediated cultural experience*, which results from the central role of digital communication systems and electronic media in everyday life. This includes activities such as watching television, typing on a keyboard, clicking a cursor, scrolling the mouse, browsing a computer screen, writing digital texts, sending and receiving images on a mobile phone, entering a PIN code, or making an online transaction (Adams, 2014:2-4).

The concept of time simultaneity and omnipresence, as realised through the Internet and World Wide Web, has given rise to a new model

of social life for enthusiasts of real-time experiences, often referred to as '*presentists*' or, more precisely, '*immediatists'*. Real-time technology not only fosters immediacy but also enables time simultaneity and omnipresence. Immediacy can be identified as a consequence of the shift from a *kronos* model of time (which views time as a sequence and duration of past, present, and future moments as a totality) to a *kairos* model (which celebrates the 'now-time' and interrupts traditional time sequences). Immediacy, in this context, emerges as a product of '*kairopolitics'*, a form of power centred on *kairos*, representing the dominance of 'now-time' over conventional time sequences (Adams, 2014:3).

The advancement of Industrial Revolution 4.0 has brought about a radical change in the relationship between physical-material and digital-non-material systems, particularly impacting the concepts of ubiquity and trans-materiality. Industrial Revolution 4.0 involves the "…technical integration of CPS (Cyber Physical System) into manufacturing and logistics and the use of the Internet of Things (IoT) and services in industrial processes. This will have implications for value creation, business models, downstream services and work organisation". (Bartodziej, 2017:34). IoT represents the fusion of the physical and digital realms, using real-time connectivity within a digital network to drive dynamic value creation (Ustundag and Emre, 2018:4). This transformative shift hinges on eight fundamental technological advancements: adaptive robotics, data analysis and artificial intelligence (specifically big data analytics), simulations, embedded systems, communication and networking, including concepts such as the industrial internet, cloud platforms, additive manufacturing, and virtualization technologies (Ustundag and Emre, 2018:5).

In the realm of technology and product development, IoT stands out as a key framework within Industry 4.0. It facilitates the creation of novel systems for art, crafts, and design. The core concept behind IoT is the idea that, instead of relying on traditional devices like computers, tablets, or mobile phones for information exchange, we harness everyday objects such as umbrellas, bracelets, shoes, chairs, ballpoint pens, rice cookers, coffee makers, or even trash bins. These objects are inherently equipped with computing technology or internet connectivity, enabling them to process, transmit, or store various forms of information, including

messages, signals, alarms, personal schedules, and data collections (McEwen & Cassimally, 2014:9-10). The development of IoT has added new dimensions of ubiquity. In IoT, ubiquity can be understood as the simultaneous or omnipresence of digital information everywhere and at all times, achieved through everyday objects like bracelets, shoes, chairs, ballpoint pens, rice cookers, and more, serving as its carriers.

The Fluid and Ubiquitous World

An example of *warung* (stall) in an alley or narrow street in Indonesian culture, and how it has been changed from a rigid to fluid from a definite time-space to ubiquity thank to the development of digital-information society, can be provided as an interesting example of the work of the principle of fluidity and ubiquity in an integrative and a parallel way. Here, digital-information technology – particularly as it has been shown through the development of digital networks that enables various digital network-based activities, like go car, go-food, go-send, etc. – is a technology that is facilitating fluidity and ubiquity.

Before the development of smartphone applications like Go-food, we had two types of eating space, organised through and determined by the rigid model of spatial segmentation and organisation. Here, we can distinguish between a (big) restaurant and a *warung* in Indonesian culture in the way of a binary logic or binary opposition. On the one hand, big restaurants can be identified as eating places with specific characteristics. It is usually a big, spacious, clean, comfortable, and expensive restaurant located in a main street, which is usually visited by a high class, and rich person by car, for the sake of lifestyle and sign value. On the other hand, *warung* is a type of eating place with opposite characteristics. It is usually a small, narrow, stuffy, dirty eating place located in an alley or a narrow street frequented by a low class or poor person by a motorcycle or on foot for the sake of subsistence and use value. These two places are rigidly separated by a partition, in which the first place is superior, while the second is deemed inferior.

RESTAURANT	WARUNG (STALL)
main street	alley
spacious	narrow
big	small
expensive	cheap
high class	low class
rich	poor
car	motor cycle
clean	dirty
roomy	stuffy
life style	subsistence
sign value	use value

However, thanks to the development of digital networks, enabling various online business platforms, like Go-car, Go-food, and Go-send, the special relation and organisation are radically changed. The digital-information technology, particularly the digital network, has given birth to fluid character in the spatial relation and organisation and ubiquity in the nature of objects. Firstly, the spatial organisation and social relation enabled by the organisation, is no longer rigidly divided by two sets of characteristics. Thus, a Go-food producer located in a narrow street no longer means low class, because high class can also order the food as long as the food is suitable to his/her taste. The spacious, roomy, or big room in the main street is no longer a main consideration in choosing food. Thus, the rigid division of society into high class/low class, rich/poor, car/motorcycle, or the spatial division of main street/narrow street, big/small, roomy/stuffy, spacious/narrow, or cultural division of life style/subsistence, sign value/use value, or expensive/cheap are no longer the main consideration in choosing food.

RESTAURANT		WARUNG (STALL)
main street		alley
spacious		narrow
big		small
expensive	FLUID	cheap
high class	RELATION	low class
rich	⟷	poor
car		motor cycle
clean		dirty
roomy		stuffy
life style		subsistence
sign value		use value

The phenomena of Go-Food can be also seen from the perspective of the escalation of ubiquity in our contemporary life, thanks to the widespread use of the internet and social media in our everyday life. The ubiquity in food does not mean that food exists everywhere and can be accessed every time, but in the sense the menu of the food can be accessed and the food itself can be ordered everywhere. Ubiquity can also mean that we do not have to spatially go to the place of the restaurant, but the food can be sent to our room. It also means that we can virtually 'visit' several restaurants at a relatively short time, before we decide to choose the preferred food. It is the image of the restaurants and their food menus that exist everywhere and can be accessed every time.

Implications for Art and Design

There were optimistic beliefs in the 1990s about the transformation of human life toward a digital existence, which would "... include less and less dependence upon being in a specific place at a specific time, and the transmission of place itself would start to become possible" (Negroponte, 1995:165). This form of life no longer depends on the real existence of a body or an object in a particular space-time; instead, it exists in an artificial or virtual space constructed by bits in a computer system. This optimism revolves around the migration of humankind from physical-material to virtual-non-material forms of life, made possible through

the development of virtual reality and cyberspace. These technologies eliminate the need for physical bodies or objects, deeming them useless or insignificant, to be replaced by a "virtual body" created artificially through digital-information technology (Rheingold, 1994:305-306). In art, design and craft in particular, there was an optimism of the transformation of skill from physical skills towards digital skills; the transformation of objects from material-physical towards immaterial-virtual objects.

The transition to virtual life has changed the concept of the "man-made world" and the idea of 'object', particularly as they are understood in art and design. In this regard, a history of objects can be identified based on their materiality. The first type of object is an '*artefact'*, a handcrafted item, used and powered by human muscle, and created one at a time. The second type of object is a '*machine'*, a complex, precisely proportioned artefact with many integral moving parts that taps into non-human, non-animal power sources. The third type is a '*gizmo'*, an unstable, user-alterable, multi-featured object with a brief lifespan. The fourth type is a '*product'*, a widely distributed, commercially available object, manufactured anonymously and uniformly in massive quantities. The development of digital information technology has introduced the fifth category of object called '*spimes'*, which are artificial objects that "begin and end as data. They are designed on screens, fabricated by digital means, and precisely tracked through space and time throughout their earthly sojourn" (Sterling, 2005, p. 10).

However, unlike the vision of the world depicted in virtual migration, the world did not actually fully develop into this virtual vision. Instead, it has evolved towards a concept of "mixed reality" or "embedded reality," thanks to the development of UC and IoT. In the era of virtual reality, the world was perceived based on binary logic. According to this logic, categories such as real vs. virtual, material vs. immaterial, physical vs. informational, analogue vs. digital, and physical body vs. virtual body were seen as oppositional, contradictory, and exclusive pairs. In this context, the categories of 'virtual', 'informational', 'immaterial', 'digital', and "virtual body" were considered hegemonic concepts, while their opposites were seen as subordinate. However, the development of ubiquitous computing has disrupted this binary logic. For instance, in the era of virtual reality,

the material, hardware, or physical body of a computer was merely perceived as a 'carrier' of its informational contents, with a vision that in the future, it would be replaced by something virtual. In contrast, 'trans-materiality' represents a "sketch of an alternative view in which both media technologies and their content coexist with us" (Whitelaw, 2012:232).

In the context of design, the concept of the *'materiality of design'* is employed to describe physical, technical, economic, political, institutional, epistemological, and discursive forms that possess physical-material characteristics (Jacques, 1981:107-111). For instance, a chair is considered a material object because it is constructed using physical materials like wood, metal, or plastic. In this regard, design activity, with its material characteristics, can be described as *"extensive design"*, involving the creation of a material and physical object in real-time and space, guided by physical laws (Piliang, 2008:400). In contrast, *"immateriality of design*" refers to a design that is entirely constructed using non-material, non-physical, and non-spatial, or, more generally, "virtual elements". This aspect of design objects, as proposed by Virilio, is solely determined by time, stemming from the eradication of geographical space through real-time experiences, which he calls the "intensive world" (Virilio, 1991b:102). In this context, *"intensive design"* is the activity of creating non-material objects within virtual time and space (Piliang, 2008:401).

The advent of the ubiquitous computing era has transcended the binary opposition between materiality and immateriality, synthesising them into the concept of *'trans-materiality'*. In this concept, the material and immaterial are viewed as two inseparable elements that together constitute the whole. As noted by Whitelaw, trans-materiality "views media and computation as always and everywhere material while maintaining the behavioural illusion of immateriality" (Whitelaw, 2012:230). Although computer systems consist of material components such as hard disks, screens, speakers, keyboards, and mouse, they are conditioned by patterns that we perceive as if they were symbolic and immaterial. For example, the email you send is the same as the one your friend receives, but only in the sense that each email has a different material basis, namely, a different computer set. Thus, the ubiquity of email or images means that they exist everywhere, albeit supported by different material platforms.

Based on the argument above, it can be argued that in the era of ubiquity and immateriality, art, design, and craft cannot be exclusively understood as either extensive or intensive. The activities related to art, design, or craft in the ubiquitous era involve a combination of material and immaterial aspects, intensive and extensive elements, spatial and temporal dimensions, real and virtual components, as inseparable parts of the art, design, and craft processes. In today's network society, an art idea is no longer the product of an individual artist, but the effect of a network. The artwork is no longer a 'thing' in the sense of a physical or material object alone, but also a virtual object in the network (Bazzichelli, 2008:56). The digital-information technology has generated a new disruptive aesthetic principle, which is highly shaped by the principle of algorithm (Kwastek, 2013:3-4). Consequently, this process cannot be comprehended solely in terms of conventional material processes. Simultaneously, it encompasses and commits to material support, bodily energies and movements, physical characteristics, and abstract immaterial manipulation of digital information. Various technologies capable of bridging the gap between the digital and physical worlds, such as sensing and tracking technologies, machine vision, laser scanners, and GPS devices, have the effect of integrating the virtual back into the physical world, creating trans-material mixed realities with new aesthetic effects (Penny, 2012:264).

Conclusion

Fluidity and ubiquity are two defining principles shaping our contemporary life. They lead us to perceive, think, experience, organise, and create things in new, different, and disruptive ways. As the defining principles of our everyday life, fluidity and ubiquity have given rise to new ways of conducting economic, political, social, educational, cultural, and artistic activities. Fluidity embodies the principle of bringing together individuals, actions, practices, spaces, materials, and ideas in various and multiple ways through dynamic, constructive, and fluid negotiations, dialogues, and sharing among different subjectivities. It represents an economy of 'in-betweenness'. Ubiquity, on the other hand, is the defining characteristic of our present world of objects, resulting from

the transition from the immaterial-dominated world of virtual reality to the more nuanced realm of augmented and mixed reality. It represents the condition of connecting things through a computer system level, encompassing both the material and immaterial levels, which creates the property of being present anywhere and everywhere.

Regarding human experience and interaction, fluidity has ushered in a new form of subject relations. It embodies the principle of a world that fosters mutually active and productive exchanges among subjects, establishing a mutual relationship from one subject to another. This world brings together individuals, actions, practices, spaces, materials, and ideas in various and diverse ways. It is generated through dynamic, constructive, and fluid negotiations, dialogues, and sharing among different subjectivities, all constructed by intermediary terms such as co-belonging, being-in-relation, median, and in-betweenness. On the other hand, ubiquity has introduced a condition of 'immediacy', referring to instantaneous or simultaneous perception. It creates real-time, networked communication enabled by the devices and infrastructure of ubiquitous computing, overcoming spatial distance. Immediacy, in this context, emphasises the contemporary media's tendency to accelerate the circulation of information, thanks to the development of digital networks and connectivity.

Fluidity and ubiquity are two fundamental principles in the creation and production of our physical, material, political, economic, social, cultural, and psychic worlds. They represent a contemporary model for generating ideas, forms, styles, products, organisations, and systems. Fluidity involves the organisation of physical, formal, social, cultural, and aesthetic elements independently of binary structures. It operates as a non-stratified principle constructed by the flow, fluidity, lines of flight, and connectivity. Ubiquity, on the other hand, serves as the fundamental principle underpinning contemporary objects. It entails the interconnection of things at both microscopic and macroscopic levels, in material and immaterial realms, resulting in the property of being present everywhere. Ubiquity has disruptive effects, both technologically and socially. It disrupts work patterns from subjective to intersubjective, transitioning from individual work to co-working. It also transforms the nature of objects, transitioning them from virtual to trans-material states. Furthermore, it reshapes the creative process, shifting from an individual to a network model.

Fluidity and ubiquity are two fundamental principles in the creation and production of our contemporary world. They encompass physical, material, political, economic, social, cultural, and psychic domains, representing a contemporary model for generating ideas, forms, styles, products, organisations, and systems. Fluidity involves the organisation of physical, formal, social, cultural, and aesthetic elements independently of binary structures. It operates as a non-stratified principle constructed by the flow, fluidity, lines of flight, and connectivity. Ubiquity, on the other hand, serves as the fundamental principle underpinning contemporary objects. It entails the interconnection of things at both microscopic and macroscopic levels, in material and immaterial realms, resulting in the property of being present everywhere. Ubiquity has disruptive effects, both technologically and socially. It transforms the nature of objects, transitioning them from virtual to trans-material states. Furthermore, it reshapes the creative process, shifting from an individual to a network model.

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