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Investigating Fluidity in Hans Haacke's *Condensation Cube* (1965) and Gustav Metzger's *Liquid Crystal Environment* (1965)

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> A delicate veil of drops begins to develop on the inside walls. . . . With continuing condensation, some drops reach such a size that their weight overcomes the forces of adhesion and they run down the walls leaving a trace. This trace starts to grow together again. . . . The image of condensation cannot be precisely predicted. It is changing freely, bound only by statistical limits.[1]

This is how Hans Haacke described the movement of liquid, running in a perpetual cycle of warming and cooling in his *Condensation Cube* (1963–65) (fig. 1). The first iteration of the 30cm^3 Perspex box was made in 1963 and later exhibited as part of the 1965 'Nul' exhibition at the Stedelijk Museum, Amsterdam. The box contained a centimetre of water, inserted via a small hole that was then closed with clear tape or a set screw. As the interior temperature rose, the water evaporated, changing to a gas and then cooling on the surface of the Perspex, eventually transitioning back to liquid upon meeting its dew point. Haacke's words emphasised the process of the water changing state.

The same year Haacke's *Condensation Cube* was displayed in Amsterdam, Gustav Metzger presented 'The Chemical Revolution in Art', as a practical demonstration for the Society of the Arts of Cambridge University. Heat sensitive crystals were placed between glass slides and onto slide projectors. Metzger intended, albeit unsuccessfully, to use the light passing through the slides to melt the crystals, producing swirling patterns and changing colours.[2] In 1966, at Better Books on the corner of Charing Cross Road and New Compton Street in London, he successfully re-presented this demonstration as *Liquid Crystal Environment* (Metzger would remake the work several times, including for a 2016 installation at Modern Art Oxford). Using five slide projectors, the liquid crystals were projected onto the walls of the shop in

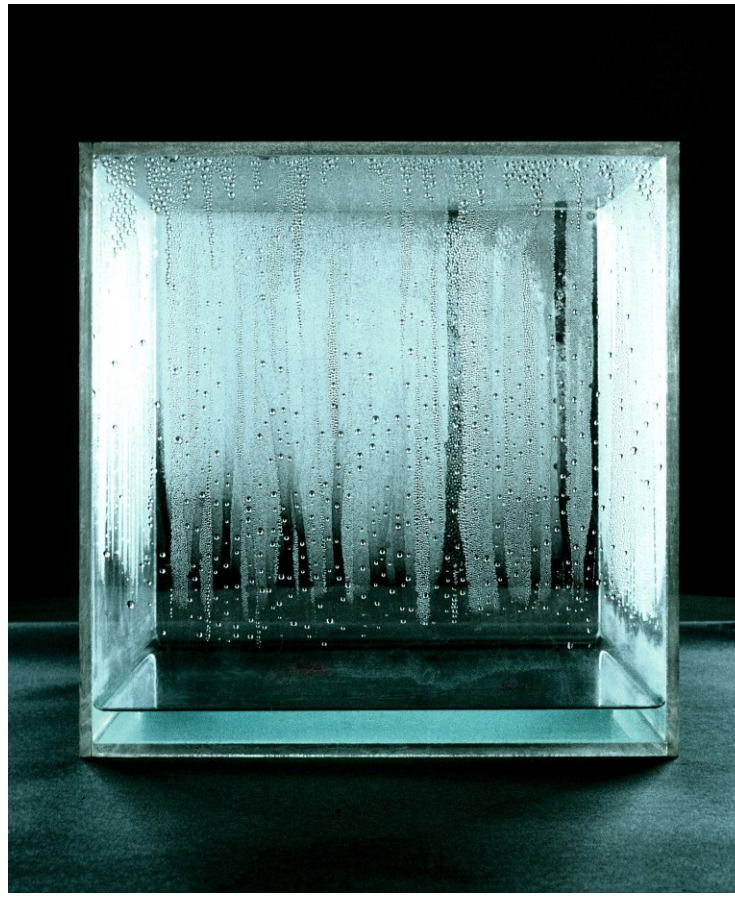

Figure 1 Hans Haacke, *Condensation Cube*. 1963–65. Clear acrylic, distilled water, and climate in area of display. 30.5 × 30.5 × 30.5 cm. © Hans Haacke / Artists Rights Society (ARS), New York. Courtesy of the artist and Paula Cooper Gallery, New York. Photo: Hans Haacke.

psychedelic patterns (fig. 2). Just as Haacke made the case for condensation as a free, uninhibited, and unpredictable process, Metzger saw the melting and cooling of crystals as a material loosening:

> [A]rt is enriched by an astronomical number of new forms, colours and textures when the rigidity of material is loosened. . . . The new art forms are related to current ideas in science and technology. This relation is on the level of ideas.

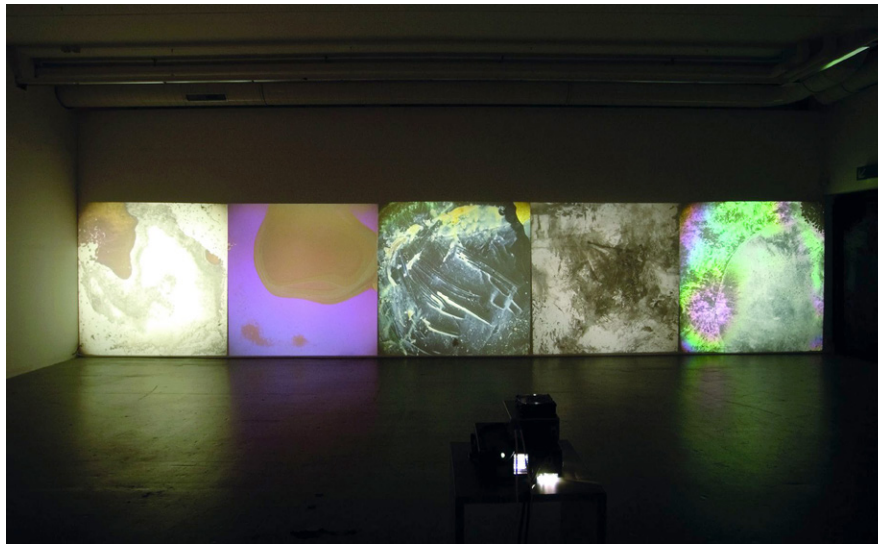

Figure 2 Gustav Metzger, Liquid Crystal Environment. 1965, 2005. 5 control units, liquid crystals and slide, 35 mm, 5 projections, colour. Modern Art Oxford. Courtesy The Estate of Gustav Metzger. © The Estate of Gustav Metzger and The Gustav Metzger Foundation. Photo: Modern Art Oxford, United Kingdom.

> It is intuitive and emotional. It is a physical involvement. In disintegrating and growing art, time ceases to be unidirectional. At 'one instant' of time, the work may be going in ten different directions in time.[3]

In these experiments, both artists engaged with the material presence of liquid changing state through a fluid process of condensation or dissolution. Furthermore, these displays of liquid in transition occurred almost simultaneously: both works were coincidentally made in 1965. According to Metzger, he first met Haacke at Galerie Schmela in Düsseldorf in 1964, and although Haacke invited him to visit his studio, Metzger left for Holland early the next day and never went.[4] As Metzger pointed out, if he had gone, he would have seen the multiple plexiglass cases containing distilled water that Haacke was working on at the time and would likely have recognised the connected material qualities of their work.[5] It was not until 1974, when both artists were involved in the ICA exhibition 'Art In Society – Society into Art: Seven German Artists' that overlaps between their practices were

revealed, specifically a shared interest in political and institutional critique.[6] This exhibition challenged the idea of art as a commodity to be passively consumed. Through live performances, debates, and the presentation of ephemera, including simple texts distributed to visitors, the curators and artists hoped to encourage active *participation in* and social *engagement with* the art on display. For his contribution, Metzger submitted only an essay for the catalogue. He sought to undermine the close relationship between art and capitalism by removing the object. He used the essay to make his intentions clear: 'the use of art for social change is bedevilled by the close integration of art and society [. . .] Art in the service of revolution is unsatisfactory and mistrusted because of the numerous links of art with the state and capitalism'.[7]

Metzger's statement is characteristic of his interrogation of the relationship between art and capitalism that continued throughout the 1970s. Haacke's practice followed a similar path in the late 1960s in terms of addressing the connections between art and other systems, including capitalism and politics. This development in Haacke's interests has been interpreted by art historians Benjamin H.D. Buchloh and Rosalyn Deutsche as a definitive change in Haacke's style, through which he moved away from the liquid interests of his earlier work.[8] Buchloh and Deutsche consider this change in their analysis of *Gallery Visitor Profile* (1969), a work famously repeated in 1970 at the Museum of Modern Art, New York (MoMA). Here, visitors were asked to respond to a seemingly straightforward question: 'Would the fact that Governor Rockefeller has not denounced President Nixon's Indochina policy be a reason for you not to vote for him in November?'. In so asking, Haacke forced judgement on the connections between American foreign policy and the institution. At the time, Nelson Rockefeller was the Republican Governor of New York and a MoMA trustee. As Haacke pointed out: '[the work was based on a particular political situation circumscribed by the Indochina War, Nixon's and Rockefeller's involvement in it, MoMA's close ties to both, [and] my own little quarrels with the museum as part of the activities of the Art Workers' Coalition'.[9] Haacke's description of *Gallery Visitor Profile* (1970) indicates his concern: what influence did partisan politics have over cultural institutions? For Buchloh and Deutsche, this was a sign of Haacke's 'mature' practice, associated with clearer and more confrontational presentations that highlighted problems of political and economic influence.[10] However, the perceived turn away from natural

systems has been disputed by Luke Skrebowski, who identifies a continuous systems-based approach in Haacke's interest in Jack Burnham's essay 'Systems Aesthetics', which was published in a 1968 edition of *Artforum*. Burnham's work drew upon *General Systems Theory* (1969), Ludwig von Bertalanffy's book-length examination of 'wholes' or 'systems' as they approached 'tremendously complex networks of interactions'.[11] Burnham used Bertalanffy's ideas to produce a critical commentary on contemporary art and its rejection of formalism, wherein the role of the object gave way to its connections with multiple systems.[12]

Skrebowski's analysis demonstrates continuity within Haacke's practice, from his early presentation of natural systems to the later political systems identified by Buchloh and Deutsche. I suggest that this continuity warrants further consideration of the critical reflection present in his early liquid-based works in the way they mediate between the artwork and the surrounding systems of influence, as was the case with *Gallery Visitor Profile*. In 'System Aesthetics', Burnham argues that the changing state of liquid in Haacke's work reflects upon the interconnected nature of contemporary society: 'we are now in transition from an object-oriented to a systems-oriented culture. Here change emanates, not from things, but *from the way things are done*'.[13] By focusing on process, Burnham highlights a shift from an object-oriented to a systems-oriented approach that emphasises the means through which things happen. When *Condensation Cube* presents water in a state of fluid flux, it likewise emphasises this idea of process.

Extending Burnham's insights, I argue that the material presence of liquid in Haacke's and Metzger's early works undermines the idea of an artwork as something solid and certain. The fluid process of liquid changing state translates to a critical process of destabilisation and visibility, as seen in their later work. In other words, Haacke and Metzger's early fluid-based works introduce a level of contingency between the work and its environment. This contingent relationship implies instability, precarity, and uncertainty, thus foreshadowing a later interest in the boundaries between the artwork and its institutional setting, as well as the influence of external economic and political systems. As Metzger has pointed out, there is something shared between the early liquid work by himself and Haacke. For Haacke, the veil of condensation revealed something unpredictable and unbound by 'statistical limits'.[14] For Metzger, the melting and cooling of crystals was a material

loosening with a durational element that elevated the artwork, broadening its ideological and temporal scope.

In both cases, liquid is used to dissolve the boundaries that define or limit the art object. To further investigate the critical stakes of liquid and examine what is enacted through the process of its transition, I turn to interface theory. These ideas have been used in art history to think through the relationship between humans and machines; they can, I would argue, also be used to draw out fluid processes to emphasise the points where systems interact.[15] This theory compliments the interdisciplinary leanings of both Haacke and Metzger and emphasises the precarious and contingent characteristics of their work. Furthermore, contingency, fluidity, and liquidity – as defined by Mary Ann Duane, Luce Irigaray, and Zygmunt Bauman – undermine notions of certainty and structure. Duane, Irigaray, and Bauman's liquid language highlights the destabilising aspects of Haacke's and Metzger's early experiments and shows how *Condensation Cube* and *Liquid Crystal Environment* critically expose the relationships between work and world, whether political, economic, or artistic.

Liquid presence – fluid process

Haacke began experimenting with liquid in plexiglass cases as early as 1962; one of the first examples is *Rain Tower*, a tall column that could be turned over causing 'rain' to fall through the segmented Perspex. Over the next few years, multiple iterations of Perspex containers filled with liquid were produced by the artist, including *Weather Boxes* (1964), *Condensation Cubes* (1963–64), *Wave* (1964), *Large Water Level* (1965), and *Circulation* (1969). Edward F. Fry has read this liquid presence through Marcel Duchamp's readymades, wherein liquid as a readymade material constitutes a presentation of natural law or phenomenon in its purest form.[16] I take a different view, arguing instead that the liquid in *process* is the point, not the liquid in and of itself. In each of these works, we see the water moving or changing state from liquid to gas and back again. It is this shifting state of the liquid in each of these works that points to the natural law of fluid dynamics. In addition, the non-natural apparatus of the plexiglass tubes, boxes, and cases makes this process visible and even emphasises it by exacerbating the constantly changing shape of the liquid contained. The reasoning for this interpretation derives from Haacke's focus on *process*, which is particularly apparent in *Condensation Cube*.

The Perspex boundaries create a vitrine that showcases the water changing state, conferring fluidity as an unfixed site of flux. The condensation covering the Perspex sides with droplets traces the journey of this process through the minimal but noticeable residue left by the small streams of water. These droplets make their mark, providing a record of their path, if only for a few moments, before being replaced.

Liquid also played a prominent role in Metzger's work prior to *Liquid Crystal Environment* and was used to highlight a dynamic set of fluid processes. In July 1960, Metzger rigged up nylon sheets outside of the South Bank Centre in London; he proceeded to paint, spray, and throw hydrochloric acid all over them. This demonstration was meant to be part of the International Union of Architects (IUA) Congress, but the organisers dropped Metzger at the last minute.[17] With the help of a group of students, Metzger went ahead with the event at South Bank regardless.[18] The sheets disintegrated on contact with the corrosive acid, placing liquid in direct relationship to physical change, albeit in a more destructive capacity than Haacke's piece. The liquid acid altered the state of the nylon sheeting, causing the material to transition into something else. A year later, Metzger described the development of this demonstration: 'there is the transformation, visible to the viewer, where colour and shapes are revealed as the process of disintegration taking place'.[19] Processes of disintegration and transformation, initiated by fluids, are present across Metzger's work, but are particularly evident in *Liquid Crystal Environment*. This constant reference to fluid processes suggests some significance. Within *Liquid Crystal Environment*, the crystals themselves are liquid and solid simultaneously, changing as they melt and solidify under the projector lights.

In emphasising the transformation of the liquid crystals, Metzger heightens the stakes of this material presence by indicating a connection between that material and its institutional environment. This can be seen in Metzger's demonstration at South Bank, where the proximity of the event to the IUA Congress related the destructive process to the actions of the organisers. By completing the demonstration in pointed defiance of its cancellation by the IUA, Metzger implied a critique whereby the corrosive impact of the acid on the nylon became a metaphorical attack on the institution that refused to show his work. Such interconnections can also be identified in *Liquid Crystal Environment*. In a 1968 article, Rein Lemberg made the case for the potential of

liquid crystals in art due to their varying colours and specific ability to change with fluctuations in temperature, electromagnetic radiation, and chemical environment. He referred to these cholesteric liquid crystals as 'chameleon-like', as they 'seem to possess two sharp and distinct melting points between which they are said to be in the liquid crystal state'.[20] Lemberg's description reinforces a crucial aspect of the fluid process in Metzger's *Liquid Crystal Environment*: the connection between artwork and environment. With Lemberg's description of the crystals in *process*, we see how the transition from solid to liquid and back is wholly dependent on external factors (temperature, chemical variations and so on). The work responds directly to its environment *and* the environment it is situated in – the institution – through liquid processes. Metzger established an environmental relationship through large-scale projections that enveloped the walls to produce an immersive experience. This relationship was developed further through the fluidity of the liquid crystals which revealed how the environment forced material change.

A similar revelation can be found in Haacke's *Condensation Cube*, where we witness the interaction between fluid process and environmental variation. The condensation requires a specific temperature level, and the speed of this depends on several factors. When *Condensation Cube* is placed in a gallery, the institution's environmental controls impact the levels of condensation. Precisely where the cube is placed in the building is also important.[21] Mark Jarzombek has connected *Condensation Cube* to climate regulations in museums, which help to preserve artworks by interrupting condensation.[22] Exposure to light is another crucial variable that changes according to the seasons and the weather outside. Further shifts in temperature depend on the number of people in the space.[23] Indeed, when discussing whether his artworks constituted autonomous objects, Haacke looked to connections between the artwork and its environment, stating: 'it is no longer justifiable to regard the "sculpture" as an isolated entity unto itself; it merges with the environment to form a system of higher complexity'.[24]

How condensation is shaped demonstrates the extent to which liquid changing state within a work is always contingent on its setting, be that an outdoor environment or a climate-controlled institution. Like Haacke's *Condensation Cube*, Metzger's *Liquid Crystal Environment* presents a complex process of liquid changing state through its relation to a specific environ. But

how might a critical connectivity created by a fluid process be characterised? What happens when the institutional environment is drawn into the constitution of an artwork? This question is essential to foregrounding the critical role of liquid in these artworks, and I would argue that the best way to describe this critical connectivity is as an interface.

In and beyond academic fields of art history and media studies, the interface is associated with screens that translate and transfer information between humans and machines.[25] However, I suggest that the fluid process to be found in both Haacke and Metzger's work is closer to the original idea of the interface, defined by the Scottish engineer James Thomson in 1880 as a specific boundary condition within the field of fluid dynamics. According to Thomson the interface is 'a face of separation, plane or curved', where two liquids, one in 'a state turbulence' another in 'a state of laminar flow', meet.[26] The interface connects these two opposing forces, allowing them to co-exist in the same body of liquid while differentiating between their distinct energy levels.[27] Another process is underway in this dynamic oscillation between liquid states and it makes the movements visible, as clarified by Branden Hookway's comprehensive genealogy of the interface:

> [A]s in the case of fluid dynamics, the interface may not only be used to describe the internal processes by which a system is defined, but also may be found as the boundary that marks the difference between a system and the environment within which it operates. In doing so the interface constitutes the site where a dynamic process of forming may become visible, legible, knowable, measurable, and available for capture in the production of work.[28]

In summary, a fluid process is a dynamic process of forming, in which the contingent relationship between a system and its environment is made visible and measurable. It is this process of *making visible* that is most applicable to Haacke's and Metzger's work. Hookway describes this characteristic of the interface as a 'powerful metaphor' for the way connections are formed and revealed.[29] Appraising metaphors of fluidity, Cadence Kinsey considered the digital rendering of water in moving image works, pointing out that water can be difficult to represent: 'how does one give visibility to something that is transparent?'.[30] In responding to this question, Kinsey reconfigured the invisibility of water as a means of revealing other information. Distilled

water, such as that found in *Condensation Cube*, is transparent, but it can be a means of revealing the immaterial or unknown in that it gives shape to something we cannot see.[31] For example, an object's volume can be found through the process of displacement. In these terms, transparent liquid makes other information visible. To expand this metaphor, if we return to Haacke's account of the 'veil', quoted at the very beginning of this article; here we are given a material indication of something that is being screened or shielded, specifically when encountered through an institutional framework. Obscuring and teasing, the veil suggests translucency for it is somewhere in-between. This interfacial metaphor speaks to the operations of liquid in these works. The distilled water and liquid crystals change material state, suggesting an interfacial relationship between artwork and environment.

This state positions the fluid process of both Haacke's and Metzger's work outside of the circumstances of a stable liquid state, suggesting instead a material in flux. It is one thing to be liquid – fluidity is uncertain, unstable, and precarious, occupying a perpetual position on the cusp of *something else*. Both *Condensation Cube* and *Liquid Crystal Environment* rely on external influences for their fluid processes. We should therefore ask: does this perpetual state of contingency destabilise the critical potential of these works or does the destabilised process presented operate in a different way? I contend that by occupying a peripheral and precarious state of contingency the work serves a different purpose through the active role liquid can play. Here, I deviate from primary definitions of contingency as a close connection or relationship. Instead, I use contingency to describe the uncertain condition of being liable to happen (or not) sometime in the future. This crucial shift lends contingency direction. Extending Mary Ann Doanne's analysis of these dynamics, we see how the free and direct uncertainty of contingency also provides a level of clarity. To this, Doanne suggests: '[c]ontingency proffers to the subject the appearance of absolute freedom, immediacy, directness'.[32] Combining these definitions shows the contingent fluid process as both *direct* and with *direction*. As a result, the connection between the artwork and its environment is made visible. In these terms, the contingent and fluid connection established by the liquid presence in Haacke and Metzger's work takes on renewed critical potential.

Clear boundaries, the critical stakes of fluidity

My secondary exploration of the destabilising influence of the term 'fluidity' begins with Luce Irigaray's work on the topic and its crucial role in disrupting the binary logic of sexual difference.[33] Here, fluidity represents a way of defining difference through flow that does not enforce a rigid biological or sexed boundary in which a woman is only defined through difference. Instead, Irigaray enables a mutuality between subjects wherein the 'rigid structures of 'either-or' are destabilized'.[34] As Hanneke Canters and Grace M. Jantzen highlight, because this fluid logic reflects the ever-changing state of conditions that are formed in constant relation to one another, it can transcend the binary of sex and be applied as a process to interrogate other binaries more effectively.[35] Here, stability is critiqued as a model that enforces an inaccurate image of the subject produced through comparison.

Irigaray's theory of destabilisation resonates with Zygmunt Bauman's influential concept of liquidity developed in *Liquid Modernity*.[36] Published in 2000, these ideas were further explicated in a 2007 presentation by Anthony Bryant, Griselda Pollock, and Metzger himself.[37] In *Liquid Modernity*, Bauman argued that a never-ending quest for stability and certainty fundamentally overlooks the uncertainty faced by all humanity. He attributed this to technological developments while suggesting that any desire for stability is in fact an inability to accept our inherently precarious state of being. For Bauman, the concept of fluidity undermines the desire for a stable endpoint, which becomes impossible in the context of liquid modernity. As Pollock points out:

> Liquefying solids in order to consolidate once again into a new formation – a model of the succession of socio-economic systems, or political systems – is very different from the condition of fluidity that becomes a constant state of lack of solidity. The whole imaginary of political stability, of social functioning – and its opposite, of violent overthrow and revolutionary change – no longer have the same pertinence they once enjoyed.[38]

In Pollock's assessment of Bauman's work, the condition of fluidity is the only constant. Despite the accuracy of Bauman's assessment of society, the lack of direction to the relinquishing of stability has also drawn criticism. As Anthony Bryant states: 'the word "liquidity" evokes the idea of flow, constant

movement, of change. Which raises the question: flow towards what? . . . Where are we headed? How can we control our speed and direction?'.[39]

However, Bryant finds critical purchase in extending Bauman's liquid language to the idea of turbulence. In his terms, turbulence provides an enigmatic marker of chaos that is 'something unknowable, unpredictable and uncontrollable', pointing out that in scientific terms, these moments of turbulence are often more prominent and recognisable than their passive counterparts.[40]

Bryant's turbulence reflects some of the phrasing Metzger and Haacke used to describe their liquid-based works. For Haacke, the liquid 'cannot be precisely predicted' and 'changes freely'; for Metzger, it is 'intuitive' and 'unidirectional'.[41] Their words articulate the unpredictable nature of condensation and the enriched nature of the liquid crystals. However, what is significant about Bryant's concept of turbulence is the way it echoes the fluid interface defined by Thompson and Hookway. Firstly, turbulence provides a prominent and therefore more visible site; secondly, within the fluid interface turbulent and calm liquids meet at a point of tension. Taking the destabilising logic of fluidity initiated by Irigaray and Bauman into consideration, I suggest that the turbulence Bryant identifies contributes to a powerful fluid metaphor that is present in Haacke and Metzger's works. This contribution characterises the tension at the meeting point between the contingent and precarious liquid in a constant process of change and the environment that shapes that change. This tension supports the critical dimension of these liquid-based works.

Both Metzger and Haacke are known for engaging with the politics and economics of art through institutional critique. Metzger, for example, openly chastised the commercialisation of art in his address to art dealers: 'you stinking fucking cigar smoking bastards and you scented fashionable cows who deal in works of art'.[42] In the case of Haacke, his critique of the financial operations of museums is well known and addressed in this article through *Gallery Visitor Profile*. And yet, exactly *how* Haacke and Metzger's liquid-based works achieve this level of criticality has been overlooked.

The potential for this kind of analysis has been introduced in the case of Hans Haacke's *Ice Stick* (1964–66), consisting of the evaporating coil of a refrigerator standing on a plinth. The piece, which also considered fluid in process, was displayed at Pontus Hultén's 1968 MoMA exhibition,

The Machine as seen at the end of the Mechanical Age. Analysis of this work provides additional support for the critical dimensions of Haacke's other liquid-based works. In *Ice Stick,* water met humid air and immediately froze against the coil, causing the liquid to transition into a solid. At the time, Hultén made the case for *Ice Stick* as a medium-specific artwork in the formalist tradition, in that the presentation of the refrigerator parts self-reflexively drew attention to its capacity to freeze, creating an autonomous image of itself.[43] However, as Luke Skrebowski has argued, *Ice Stick* draws on its surroundings more than itself, by being 'in favor of a focus on art as a contextually related process'.[44] For Skrebowski, this work saw 'Haacke stag[e] a disappearing act, the artwork camouflaging itself against the museum's blizzard of 'neutrality''.[45] As such, *Ice Stick* didn't only refer to its own material structure, but rather enacted a fluid process with and through its surrounding space, demonstrating the environmental impact on this process. In this capacity, fluidity as transition crucially articulates the artwork's connection to external systems. In the case of *Ice Stick*, these systems included MoMA which, as highlighted by *Gallery Visitor Profile,* was an institution associated with problematic political figures.

In the case of Haacke's *Ice Stick*, the fluctuating liquid made the self-reflexive relationship between artwork and environment visible, and this was also the case in his *Condensation Cube*. Taking the point of tension characterised by the interface, as defined by Thompson and Hookway, together with the critical dimension of precarious liquidity and turbulence, as noted by Bauman and Bryant, the artwork and its environment meet at the fluid interface, a site of tension where the art institution directly and visibly alters the artwork. In *Ice Stick*, the museum's impact on the fluid process takes on a new dimension, arguably because it makes the influence of the museum on the artwork visible in the very making of ice. This begs a question: what other invisible systems might shape an artwork? To formulate anything like an answer, it is necessary to consider the complex intersection of systems involved in the fluid processes of these works.

The intersection between art, scientific process, and institutional influence coalesces in the fluid processes of Haacke's *Condensation Cube* and Metzger's *Liquid Crystal Environment*. The interdisciplinary nature of Haacke's and Metzger's practice is present in their writings and their artworks. As mentioned, Haacke was interested in the study of systems theory, a field

which examines the network of interactions between systems – scientific or technological – as well as social and cultural studies.[46] Haacke's sustained interest in a systems approach supports the idea that he used the material qualities of distilled water to present a natural system. This natural system, subject to the laws of fluid dynamics, articulates an interaction between the system of the institution and its influence by making this fluid process visible.

Metzger was likewise critical of the systemic intersections of science, industry, and an increasingly capital-driven art market from the early 1950s onwards. According to Metzger, the interaction between scientific communities and capitalist influence was excessively passive and would bring about the demise of humanity.[47] In 1965, he called for action on destructive technologies, including nuclear weapons and environmental pollution caused by cars and pesticides. Significantly, he called on individuals to 'act beyond their professional disciplines, in fact [they] must use their professions to change society'.[48] Here, as Elisabeth Fisher suggests, Metzger looked to a collaborative engagement between industries that could transcend the boundaries of science, art, and life, improving society as a result.[49] He followed this aim by making use of various scientific methods and technologies – slide projectors, microscopes, liquid crystals – to articulate the close relationship between systems. This was a means of transcending the boundaries of art as an autonomous field and releasing (art) making from the degrading influence of capitalism.[50] As Metzger continued: 'to go on limiting oneself to achievement strictly within the rules of a profession laid down by a society that is on the point of collapse, is to me a betrayal'.[51] Here, the critical stakes of this intersection are raised significantly. This case is strengthened by knowing that Metzger made these calls for interdisciplinary action at the same time he presented *Liquid Crystal Environment* in London.

What becomes clear from these examples is that liquid constitutes a central site of tension. The presence of liquid functions as a fluid interfacial process *between* the works and the systems that make them visible. In the case of Haacke's *Condensation Cube*, the fluid process changes according to the museum environment. This fluidity highlights the institutional impact on the work, disrupting the 'blizzard of neutrality' that the gallery space might otherwise suggest.[52] In Metzger's *Liquid Crystal Environment*, the intersection between art, science and technology is made manifest through the materials

of the work; the contingent, unstable process of melting and solidifying highlights how these systems influence one another.

Through these considerations, we can regard the fluidity of *Condensation Cube* and *Liquid Crystal Environment* as registering how artworks are enmeshed in institutional relations. Here, the material presence of liquid informs a fluid process and provides an alternative perspective from the site where this process is defined in interfacial terms.[53] Subsequently, the process foregrounded in *Condensation Cube* and *Liquid Crystal Environment* visibly connects the artwork to its institutional setting. In these terms, the liquid used in Haacke's and Metzger's early work turns critical, thus providing an earlier date for the socio-political interests of these two artists. Interrogating the fluid processes within these works shows how these early fluid-based works also expose a complex intersection of influential systems. This is reinforced by critical interpretations of liquidity and turbulence in which the precarity of a liquid state constitutes a site of resistance to institutional influence.

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Notes

1 Hans Haacke, untitled statement ['I have partially filled . . .'] (1965), in *Working Conditions: The Writings of Hans Haacke*, ed. Alexander Alberro (Cambridge, MA: MIT Press, 2016), 6.

2 Elisabeth Fisher, 'Gustav Metzger: Iconoclasm and Interdisciplinarity', in *Interdisciplinary Science Reviews* 42, no. 1–2, 2017, 4.

3 Gustav Metzger, 'The Chemical Revolution in Art', in *Gustav Metzger: Writings*, ed. Mathieu Copeland (Geneva: JRP editions, 2019), 134.

4 Gustav Metzger, 'Protest and Survive: Interview with Gustav Metzger', *Frieze,* 6 June, 2007, www.frieze.com/article/protest-and-survive.

5 Metzger, 'Protest and Survive'. Also see Jack Burnham, 'Wind and Water Sculpture', in *October Files: Hans Haacke*, ed. Rachel Churner (Cambridge, MA: MIT Press, 2015), 1–24. Burnham references his visit to Haacke's studio in 1964, and he describes the room as being filled with plexi-glass cases containing water, 7.

6 Gabrielle Schwarz, 'Archival Reflections: Art into Society', *ICA Bulletin*, 22 February, 2016, https://archive.ica.art/bulletin/archival-reflections-art-society.

7 Gustav Metzger, *Art into society, Society into Art: Seven German artists,* eds. Christos M.

Joachimides and Norman Rosenthal (London: Institute of Contemporary Art, 1974), 79.

8 Benjamin Buchloh, 'Hans Haacke: From Factographic Sculpture to Counter Monument', in *Hans Haacke – For Real: Works 1959–2006*, eds. Matthias Flügge and Robert Fleck (Düsseldorf: Richter|Fey, 2006), 42–59. See also Rosalyn Deutsche, 'The Art of Not Being Governed Quite So Much', in *October Files: Hans Haacke*, 165–184.

9 Hans Haacke, 'Proposal: Poll of MoMA Visitors', in *Information*, ed. Kynaston McShine (New York: Museum of Modern Art, 1970), 57.

10 Haacke, 'Proposal', 57.

11 Ludwig Von Bertalanffy, 'Systems Everywhere', in *General Systems Theory: Foundations, Development, Applications* (New York: Publisher, 1969), 4.

12 Jack Burnham, 'Sculpture, Systems and Catastrophe', in *Dissolve into Comprehension: Writings and Interviews, 1964–2004*, ed. Melissa Ragain (Cambridge, MA: MIT Press, 2015), 82.

13 Burnham, 'Sculpture, Systems and Catastrophe', 116.

14 Haacke, untitled statement ['I have partially filled . . .'], 6.

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