

Analog to Digital in Teater Garasi's Waktu Batu Cycle, Yogyakarta: Technology, Repetition, and Theatrical Presence

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Article history: Received: 25 June 2024 | Revised: 20 August 2024 | Accepted: 1 September 2024 |
| Published: 1 December 2024 |

Article type: Research Article

DOI: [https://doi.org/ 10.33292/locus.v2i02.17](https://doi.org/10.33292/locus.v2i02.17)

ABSTRACT	KEYWORDS
Indonesian theatre scholarship has concentrated on traditional genres and on the political sociology of the modern stage, leaving the specifically technological reconstitution of theatrical aesthetics largely unexamined, while the international literature on digital performance has been built almost entirely on European and North American material. This article examines how digital technology has reconfigured the aesthetic conditions of contemporary Indonesian theatre, and assesses how far European media theory can describe that reconfiguration. The study is a single-case interpretive analysis of Teater Garasi's four-production Waktu Batu cycle, staged in Yogyakarta between 2002 and 2023, with the fourth production as the focal instance. Fieldwork consisted of attendance at two performances at Artjog in June and July 2023, supplemented by a three-tier documentary corpus of company materials, published criticism, and archival recordings held by the Indonesian Visual Art Archive. Performance analysis followed a descriptive procedure in which corporeality, spatiality, tonality, and temporality were described before being read for their relations, and the fit of each imported concept was tested rather than assumed. The analysis shows that the cycle's movement toward the digital was gradual and uneven: mediation preceded programmability, and programmability preceded responsiveness by nearly two decades. The 2023 production does not dissolve theatrical presence into mediation but holds the two in unresolved tension. The study contributes a revised analytical question for the study of technology in local performance cultures: not whether aura survives reproduction, but what kind of repetition a given technology institutes, and how it differs from the trained and fallible repetition of ritual practice.	Aura Autopoietic feedback loop Javanese ritual repetition Liveness Projection mapping  This is an open access article under the CC BY-SA 4.0 license.

How to cite: Sunyi, P. I. (2024). Analog to digital in Teater Garasi's Waktu Batu cycle, Yogyakarta: Technology, repetition, and theatrical presence. *Journal of Local Culture Study*, 2(2), 113–126. <https://doi.org/10.33292/locus.v2i02.17>

INTRODUCTION

In June 2023, in a hall of the Jogja National Museum in Yogyakarta, a fogger filled the playing area with a dense white haze and a projector cast a lattice of thin green lines into it. The lines read as flat where they struck the walls and as volumetric where they crossed the fog, so that the performers seated at a low table in the middle of the room appeared to be enclosed in a structure that had no material existence. Around the table a family meal proceeded. Elsewhere in the same room, members of the audience held game controllers whose inputs altered what was projected, a camera on a moving rig recorded the performers and returned their images to a screen a few metres away, and the performers' voices arrived through a processing chain that made the fact of processing audible. The production was *Waktu Batu Rumah yang Terbakar*, the fourth instalment of a cycle that Teater Garasi began in 2002 with a work that had no projection, no processed sound, and no computation of any kind.

Teater Garasi, founded in Yogyakarta in 1993 and reconstituted as the Garasi Performance Institute in 2010, is among the most consistently experimental of Indonesia's independent companies. The *Waktu Batu* cycle is its longest-running project. Its material derives from Javanese mythological sources — the Watugunung cycle, the Murwakala myth, and the Ajisaka narrative — which the company has treated across all four productions as a resource for thinking about historical time, national memory, and the layering of belief. Over two decades the cycle moved from unmediated physical theatre to a densely computational performance environment. That movement is the object of this article.

Scholarship on Indonesian theatre has developed along two dominant lines, and neither takes technology as its problem. The first documents and interprets traditional performance genres and their transformation under conditions of modernity and globalisation; Soedarsono (2002) and Sedyawati (2006) are the standard reference points, and their concern is with the continuity of *seni pertunjukan* (performing arts) practice under pressure. The second reads modern Indonesian theatre as a political and postcolonial formation. Bodden (2010), Hatley (2008), and Winet (2010) attend to censorship, national identity, and the contested cultural politics of the New Order and *Reformasi* periods, while Sumardjo (1992) and Simatupang (2013) have documented the institutional and aesthetic development of *teater modern* (modern theatre) in Indonesia. Jurriëns (2017) extends this second line into the domain of video and screen media, examining how Indonesian artists have used moving-image technologies critically, but his corpus is gallery-based rather than theatrical.

The international literature on digital performance is correspondingly rich and correspondingly limited in its evidentiary base. Dixon (2007) provides the standard history of new media in theatre, dance, and installation; Causey (2006) theorises the passage from simulation to embeddedness; Giannachi (2004) and Salter (2010) map virtual and entangled performance environments; and Birringer (2008) reads performance against science and technology. All five are built almost exclusively on European and North American case material, and none tests its categories against Southeast Asian performance conditions. The theoretical apparatus these studies rely on — Benjamin's account of aura, Auslander's critique of liveness, Phelan's ontology of disappearance — was formulated in response to European and North American crises of reproduction and mediatization, and travels to Indonesian material without examination.

The gap is therefore twofold and is a deficiency in knowledge rather than an absence of publications. Indonesian theatre scholarship has not analysed how projection, real-time capture, computational sound, and interactive systems alter the way a performance produces

meaning; digital performance scholarship has not tested whether its central categories hold where the local performance culture rests on ritual assumptions those categories do not anticipate. A few researchers have noted this asymmetry in passing, but no study has yet analysed a sustained Indonesian digital-theatre project in a way that treats the encounter between these two bodies of work as itself the object of inquiry. This article is the first to read a two-decade Indonesian theatre cycle as a test case for European media theory, and to derive from that test a revised analytical question concerning repetition rather than singularity.

The article accordingly pursues three aims. It documents the technological development of the *Waktu Batu* cycle across its four productions; it analyses the aesthetic operations of digital technology in *Waktu Batu Rumah yang Terbakar* (2023); and it assesses how far European theories of aura, reproduction, and liveness require modification when applied to a performance culture grounded in Javanese cosmological and ritual assumptions.

METHOD

Research Design and Approach

The study was designed as a single-case interpretive analysis. The unit of analysis is the *Waktu Batu* cycle as a whole; the fourth production serves as the focal instance for close analysis. A single-case design was chosen because the research question concerns change over time within one artistic practice, which a cross-sectional comparison of several companies could not capture. The design's limitation is that its findings are not statistically generalisable; the claim advanced is one of analytic rather than statistical generalisation, in that the case is used to test and refine existing theory rather than to establish frequencies.

Three theoretical bodies were brought to bear, at different points and for different purposes. Fischer-Lichte's (2008) aesthetics of the performative supplied the descriptive apparatus and was applied from the first stage of analysis onward. Benjamin (1969), Auslander (1999, 2012), and Phelan (1993) were treated not as instruments but as objects of analysis, and were introduced only after the descriptive stage was complete, so that the material was not pre-sorted into their categories. Chakrabarty's (2000) argument that European categories are at once indispensable and inadequate for analysing non-European material, Bharucha's (1993, 2000) insistence that intercultural performance analysis must attend to the asymmetries of power embedded in its own apparatus, and Ngũgĩ wa Thiong'o's (1986) account of how imported analytical vocabularies displace the categories a culture uses to understand its own practice together governed the third stage, in which the fit of each imported concept was assessed.

Site, Period, and Corpus

The field site is Yogyakarta, and specifically the venues in which the cycle has been staged: Teater Garasi's own studio in Nitiprayan for the earlier productions, and the Jogja National Museum, where Artjog is held, for the fourth. The corpus consists of the four productions of the cycle: *Kisah-kisah yang Bertemu di Ruang Tunggu* (2002), *Ritus Seratus Kecemasan dan Wajah Siapa yang Terbelah* (2003), *Deus ex Machina dan Perasaan-perasaan Padamu* (2004), and *Waktu Batu Rumah yang Terbakar* (2023). Inclusion was determined by the company's own designation of a work as belonging to the cycle; adjacent Teater Garasi productions of the same period, including *Tubuh Ketiga* and *Yang Fana adalah Waktu*, were excluded on that criterion even where they share personnel and technical means.

Direct observation took place in June and July 2023, when the author attended two performances of *Waktu Batu Rumah yang Terbakar* at Artjog, one from a seated position at the periphery of the playing area and one from a standing position within it. The archival materials are held by the Indonesian Visual Art Archive (IVAA) in Yogyakarta and by Teater

Garasi / Garasi Performance Institute; published criticism was retrieved from the archives of *Kompas*, *Tempo*, and *Sarasvati*, and from Artjog catalogues.

Data Collection

Documentary material was assembled in three tiers. Tier one comprises materials produced by the company: printed programmes for all four productions, the published *Waktu Batu* dramaturgical notes, and public statements and interviews given by Yudi Ahmad Tajudin and Ugoran Prasad. Tier two comprises published criticism in *Kompas*, *Tempo*, and the arts periodical *Sarasvati*, together with catalogue essays from Artjog. Tier three comprises audiovisual documentation: full-length archival recordings held by IVAA for the second and third productions, and the company's own documentation of the fourth.

Observation was structured rather than open. At each attendance the author recorded, in separate columns of a field notebook, the performers' physical action, the disposition of the playing space, the sonic environment, and the operation of each technical system, noting the clock time of every change so that the four records could later be aligned. Photography and video recording were not undertaken, in accordance with the conditions of attendance; the visual record used in the analysis is the company's own. Informal conversations with two members of the production team took place after the second performance and are cited in the text as personal communications.

The corpus is unevenly distributed, and this materially constrains what can be claimed. Documentation of the first production is fragmentary: no full recording is known to survive, and the analysis of that production rests on programme material and three published reviews. Documentation of the fourth is by contrast abundant. Any claim in this article about the 2002 production is therefore weaker in evidentiary terms than a corresponding claim about the 2023 production, and the analysis flags this asymmetry wherever it bears on the argument.

Data Validation and Analysis

Credibility was established by three means. Source triangulation set company materials against independent published criticism and against archival recordings, and no claim about a production's technical means was retained unless it could be corroborated in at least two tiers of the corpus. Technique triangulation set the author's observational record against the recorded documentation of the same production. Expert validation was obtained by submitting the description of the four technical systems in the 2023 production to two members of the production team, who confirmed the description and corrected one point concerning the routing of the vocal processing chain.

Analysis proceeded in four steps. First, each production was described independently along the four material registers Fischer-Lichte (2008) identifies — corporeality, spatiality, tonality, and temporality — without interpretation and without reference to the other productions. Second, the descriptions were compared across the four productions and the technical means of each were classified on a three-term scale of mediation, programmability, and responsiveness, yielding the trajectory presented in Table 1. Third, each technical system in the 2023 production was examined for the relation it establishes between performer, image, and spectator, and for its effect on the autopoietic feedback loop. Fourth, the resulting findings were tested against Benjamin, Auslander, Phelan, and Fischer-Lichte in turn; where an imported concept failed to describe the material, the failure was recorded as a finding rather than smoothed over, following Chakrabarty (2000).

Research Ethics and Positionality

No institutional review board with jurisdiction over arts research operates at the author's institution. Consent was secured directly: Teater Garasi / Garasi Performance Institute granted written permission for the use of production documentation and for the description

of unpublished technical arrangements, and the two members of the production team cited as personal communications agreed to be cited by role rather than by name. No images of identifiable persons are reproduced here. No material from restricted or sacred ritual contexts is discussed; the Javanese mythological sources on which the cycle draws are treated only as they appear in the company's own published dramaturgy.

The author is a member of the teaching staff of the Jurusan Teater at Institut Seni Indonesia Yogyakarta, an institution named in this article as part of the infrastructure that supports digital performance in the city, and attended the 2023 production as a paying member of the public. The author has no financial or professional relationship with Teater Garasi. This proximity is an advantage for access and a risk for critical distance, and it is for that reason that the expert validation described above was sought from the company rather than from colleagues at the author's own institution.

The study includes no empirical audience research. Claims about spectatorial experience are inferences from formal analysis and from the author's own attendance, supplemented where possible by published reviewers' accounts. They are not findings about how audiences in general responded, and are marked in the text as inferences wherever they occur.

RESULT AND DISCUSSION

Programmability, Not the Screen, as the Threshold Between Analog and Digital

The terms *analog* and *digital* name two ways of relating a representation to what it represents. *Analog* derives from the Greek *analogos*, from *ana* ('according to') and *logos* ('ratio' or 'proportion'), and an analog representation preserves a continuous proportional relation to its source. Peters (2015) describes this as indexical isomorphism: the groove depth in a vinyl record varies in proportion to the amplitude of the sound that cut it. *Digital* derives from the Latin *digitus*, 'finger', and names the opposite operation — the division of a continuum into discrete countable units, in modern computation into binary states.

The distinction matters for theatre because it separates two ways technology can enter a performance. Analog stage technology extends the physical event: an overhead projector enlarges a transparency, a gramophone amplifies a recorded sound. Digital stage technology first decomposes the event into data and then reconstitutes it, and in that interval the event becomes available for computation — it can be delayed, transformed, generated, or made responsive to input. Manovich (2001) identifies this as the defining property of new media: the object becomes programmable. It is programmability, not screen presence, that distinguishes digital from analog theatre technology.

This is a departure from the working assumption of much of the digital performance literature, in which the presence of projected image is itself taken as the marker of the digital. Dixon (2007) organises a substantial part of his history around screen use, and Causey (2006) treats the doubled image as the characteristic figure of digital theatre. The *Waktu Batu* material does not support that identification. As the analysis below shows, the cycle carried projection for twenty years before it carried computation, and the dramaturgical consequences of the two are not the same. The threshold proposed here is therefore finer-grained than the one in general use, and it distinguishes three conditions rather than two: mediation, in which an image or sound is added to the stage; programmability, in which that material has been decomposed into data and can be manipulated; and responsiveness, in which the manipulation occurs in real time and takes its input from the event itself.

Aura as Correct Repetition Rather Than Singularity in Javanese Performance

Walter Benjamin's essay on mechanical reproduction remains the standard theoretical entry point for discussions of technology and art. Benjamin (1969) argues that the artwork's aura —

its authority — derives from its unique presence in time and space, and that mechanical reproduction, by detaching the image from that singular location, causes the aura to decay. He treats this decay ambivalently: it destroys the artwork's cultic authority but frees art from ritual and opens it to political use.

Applied to theatre the argument seems immediately apt, since theatre is constitutively an event in a single time and place. But the fit is poorer than it first appears, and the mismatch is instructive. Benjamin's aura presupposes a specific relation between authenticity and singularity: the original is authoritative because it is unrepeatable and because its history has left marks on it. This is an account derived from the European art object — the panel painting, the cathedral — and from a particular European crisis, the commodification of culture in interwar Germany.

Javanese performance traditions rest on a different relation. In *wayang kulit* (shadow puppet theatre), the authority of a performance derives not from its unrepeatability but from the correctness of its repetition: the *dalang's* (puppeteer's) mastery is measured by fidelity to inherited *lakon* (repertoire narratives), *gendhing* (gamelan compositions), and *sabet* (puppet movement technique), and a performance that departed from these would lose rather than gain authority. Soedarsono (2002) and Sedyawati (2006) both emphasise that the ritual efficacy of traditional Javanese performance depends on accurate reiteration. Aura here is a function of correct repetition, not of singular non-repeatability. Benjamin's opposition between auratic uniqueness and reproducible copy does not map onto this structure, because the traditional performance was never premised on uniqueness to begin with.

This finding qualifies rather than contradicts the use made of Benjamin in the digital performance literature. Causey (2006) and Giannachi (2004) both take the decay of aura as the background condition against which digital theatre operates, and for the European repertoire on which they work that premise is defensible. What the present case shows is that the premise is local rather than general. When digital reproduction enters an Indonesian theatrical context, it does not encounter an auratic uniqueness that it then destroys. It encounters a performance culture already organised around repetition, and the question it poses is not whether aura survives reproduction but what kind of repetition digital technology institutes and how that differs from ritual repetition. That is a different question from Benjamin's, and it is the one the *Waktu Batu* material actually answers.

The Autopoietic Loop as a Testable Alternative to the Liveness Debate

Auslander (1999) argues that live performance has lost any privileged claim to authenticity, having been thoroughly shaped by the conventions of mediatised culture; live and recorded performance, on his account, are now functionally equivalent. Auslander (2012) later qualified this, allowing that digital liveness is better understood as a shifting relation between spectator and event than as a fixed ontological property. Phelan (1993) had argued the contrary case, that performance's ontology consists precisely in its disappearance and its resistance to reproduction.

Fischer-Lichte (2008) offers a more useful framework for the present analysis than either pole of that debate. She locates the specificity of performance not in an ontological property of the live but in the autopoietic feedback loop: the self-generating circuit through which the co-presence of performers and spectators continuously modifies the event as it unfolds. This formulation is more serviceable here because it is empirically testable — one can ask of a given production whether and how the loop operates — and because it does not require adjudicating whether liveness has an essence.

There is also a contextual reason to prefer it. Auslander's framework was developed in response to North American commercial entertainment, and presupposes a media ecology and an economics of spectacle that do not straightforwardly describe the Indonesian independent

theatre sector, where the pressures on live performance come less from broadcast competition than from funding scarcity and institutional fragility. A theory that explains the devaluation of the live by reference to the saturation of broadcast media explains little in a sector whose works are seen by a few hundred people over three nights and then cease to exist.

Festival Commissioning and the Institutional Shape of Indonesian Digital Theater

Digital theatre in Indonesia has developed within a specific institutional infrastructure that shapes what is producible, and the aesthetic analysis that follows cannot be separated from it. Three elements are decisive. First, the state arts academies — principally ISI Yogyakarta, ISI Surakarta, and ISBI Bandung — supply both technical training and equipment access, and a substantial proportion of digitally engaged practitioners have passed through them. Second, Artjog, the annual Yogyakarta contemporary art festival, has since 2008 functioned as the principal commissioning platform for technologically ambitious performance work, offering budgets and exhibition infrastructure unavailable elsewhere; both Deden Bulqini's robotic work and the fourth *Waktu Batu* were produced under its auspices. Third, foreign cultural institutes — the Goethe-Institut, the Japan Foundation, and formerly the Ford Foundation — have supplied a disproportionate share of project funding for experimental performance.

This configuration has consequences that should be stated plainly. Digital theatre in Indonesia is concentrated in Yogyakarta and Jakarta, is dependent on festival commissioning cycles rather than on repertory seasons, and is partly shaped by the programming priorities of foreign funders. The aesthetic ambition visible in the work under discussion is therefore not simply an artistic achievement; it is also an artefact of a particular and unevenly distributed institutional capacity. The nineteen-year gap in the *Waktu Batu* cycle, discussed below, is legible in these terms as much as in artistic ones.

Stratified Connectivity and the Limits of the Distributive Claim

The general claims made for digital culture require qualification before they can be applied to Indonesian theatre. Gere (2008) characterises digital culture as a way of life shaped by interconnected information technologies rather than as a set of devices, and Castells (2010) describes the resulting social form as a network society in which a space of flows progressively displaces a space of places. Both accounts are useful at the level of description. Both were also developed from evidence drawn overwhelmingly from high-connectivity societies, and neither adequately theorises the situation of a country where connectivity is real, rapid, and sharply stratified.

Indonesia is such a case. Mobile internet penetration is high and social media use is among the highest in the world by absolute volume, but fixed broadband of the quality required for high-bandwidth performance streaming remains concentrated in Java and a few urban centres elsewhere. The consequence for theatre is specific: the distributive promise most often claimed for digital performance — that a production in Yogyakarta becomes available to audiences anywhere — is realised asymmetrically. It is realised most fully for audiences in other well-connected cities, including foreign ones, and least for audiences in the parts of Indonesia where the traditions the work draws on remain living practice. Castells' own account anticipates this in principle, since he treats exclusion from the network as constitutive of it rather than incidental, but the point is worth stating concretely because it bears on who Indonesian digital theatre is actually for.

Similar qualification applies to claims about participation. Bruns (2008) describes produsage as the characteristic mode of networked cultural activity, in which the distinction between producer and user dissolves, and Jenkins (2006) describes a convergence culture in which audiences actively circulate and rework media content. Both are visible around Indonesian performance: productions generate substantial informal documentation, commentary, and

circulation on social platforms, and this secondary material now constitutes a significant part of a production's public existence. But produsage around a theatrical event is not the same as participation within it. The audience that photographs, clips, and comments is producing a parallel artefact, not modifying the performance. This distinction matters for the analysis of the interactive game component discussed below, where participation is instrumented inside the work rather than occurring around it, and where the constraints on it are correspondingly explicit.

Three Precursors in Indonesian New Media Practice

The technical vocabulary on which the fourth *Waktu Batu* draws did not arrive in Yogyakarta with that production. Three earlier practices established the terms, and each bears directly on the argument about repetition developed above.

Krisna Murti and the critique of broadcast rhythm

Krisna Murti's *12 Jam Tidur* (12 Hours of Sleep, 1993) is among the earliest sustained Indonesian video installations. The work presents extended, largely static footage of a sleeping figure across multiple monitors. Its significance lies in its temporal strategy: by refusing the compressed rhythm of broadcast television, which under the New Order was the dominant visual regime, the piece made that rhythm perceptible as a construction rather than a norm. The critique operates through duration rather than through content, and this is characteristic of Murti's method. Supartono (2004) describes Murti's installations as environments in which social reality is fragmented and reassembled, and Jurriëns (2017) situates the work within a broader Indonesian video practice defined by its oppositional relation to television. Murti's own *Esai tentang Video dan Seni Media Baru* (2009) sets out the theoretical position underlying this practice, arguing that media artists in Indonesia bear a specific responsibility toward questions of democratic participation.

Jompet Kuswidananto and programmed ceremony

Jompet Kuswidananto's *Java's Machine: Phantasmagoria* (2008) consists of ranks of empty uniforms — drawn from the ceremonial dress of the Yogyakarta palace guard — suspended in space, each fitted with mechanical drums, cymbals, and lights that fire in programmed sequence. No bodies are present. The work stages a Javanese ceremonial formation as an automated system, and its force derives from the exactness with which mechanical actuation substitutes for human ritual performance. Read against the discussion of repetition above, the installation makes visible precisely the difference this article is concerned with: ritual repetition performed by bodies within a tradition, and programmed repetition executed by machines, look similar and are not the same. Jompet's long collaboration with Teater Garasi brought this sensibility directly into the company's stage practice, and the fourth *Waktu Batu* is unintelligible without it.

Deden Bulqini and the non-human performer

Deden Bulqini's robot *Jack*, presented at Artjog, is the most literal Indonesian instance of a non-human performer. Bulqini trained in multimedia at Teater Koma, one of Indonesia's largest and most conventionally organised companies, and *Jack* should be read against that background: it is the work of a practitioner who understood mainstream theatrical convention thoroughly before departing from it. *Jack* is not a puppet, since it is not manipulated in real time by a visible operator, and it is not a character in the conventional sense, since it has no interiority to project. It occupies a position for which Indonesian theatrical vocabulary has no established term. Its interest lies in what it does to spectatorial attribution: audiences at Artjog were observed attributing intention to the machine's movements, and Bulqini's dramaturgy exploits rather than resolves that attribution. The work sits at an angle to the *wayang* tradition,

in which the puppet's animacy is openly a product of the *dalang*'s labour and is never mistaken for autonomy; *Jack* withholds that clarity.

Technological Development Across the Waktu Batu Cycle

The technological trajectory of the cycle, classified on the three-term scale set out above, is summarised in Table 1. Each production is then discussed in turn.

Table 1. Technological development across the four productions of the Waktu Batu cycle

Production	Year	Technical means	Mediated	Programmable	Responsive
<i>Kisah-kisah yang Bertemu di Ruang Tunggu</i>	2002	Practical lighting; live musicians; constructed set	No	No	No
<i>Ritus Seratus Kecemasan dan Wajah Siapa yang Terbelah</i>	2003	Slide and film projection; amplified and processed sound	Yes	No	No
<i>Deus ex Machina dan Perasaan-perasaan Padamu</i>	2004	Video projection; sampled and sequenced sound; mechanical scenography	Yes	Yes	No
<i>Waktu Batu Rumah yang Terbakar</i>	2023	Real-time projection mapping; live vocal processing; interactive game; kinetic camera; fogger	Yes	Yes	Yes (bounded)

Source: Compiled by the author from company programmes, published criticism, and archival recordings held by IVAA.

Kisah-kisah yang Bertemu di Ruang Tunggu (2002)

The first production established the cycle's structural method: discontinuous scenes drawn from different temporal registers, presented without a unifying narrative frame. Technologically it was conventional. Reviews describe a constructed waiting-room set, practical lighting, and live musicians; the dramaturgical burden fell on the performers' bodies and on the spatial arrangement of the audience relative to them. The surviving documentation, as noted in the Method, is thin, and this account should be read as provisional. What can be established is that the production's principal effect — the sense of temporal dislocation — was achieved through editing and juxtaposition at the level of scene structure, without technological mediation. This matters for the cycle's later development, because it establishes that the discontinuity digital tools would later produce was first achieved without them.

Ritus Seratus Kecemasan dan Wajah Siapa yang Terbelah (2003)

The second production introduced projected image and processed sound. Slide and film projection was used to overlay the stage with material — photographic, textual, documentary — that stood in oblique relation to the live action. Contemporary reviews register this as a significant shift in the company's method, and identify the projections as producing a doubling in which the stage carried more than one order of representation at once. The mediation here remains analog: the projection is continuous, indexical, and not responsive to what the performers do. Its dramaturgical function is juxtaposition. The autopoietic loop, in Fischer-Lichte's sense, is unaffected, since the projected material cannot register the spectator's or the performer's presence. This production is therefore the clearest counter-instance to the identification of screen presence with the digital.

Deus ex Machina dan Perasaan-perasaan Padamu (2004)

The third production is the pivot of the cycle. Its title announces the machine as its subject, and its scenography incorporated mechanical elements alongside video projection and sampled, sequenced sound. The *deus ex machina* of the title is the classical device by which a mechanical apparatus lowers a god onto the stage to resolve an insoluble plot — a device that is itself the founding instance of stage technology, and one that Barba and Savarese (2006) identify as a recurring reference point in Western theatrical self-understanding. Teater Garasi's use of it is ironic: the production supplies the apparatus and withholds the resolution.

Technologically the production is transitional. Sampled and sequenced sound is a digital operation in the precise sense established above — material is decomposed and reconstituted, and becomes programmable. But the programming remains fixed in advance; nothing in the production responds in real time. The archival recording held by IVAA shows the video material running to a predetermined cue sequence. What distinguishes this production is therefore not the responsiveness of its technology but its thematisation: the machine has become a subject of the work, not merely a resource for it. The nineteen-year gap before the fourth production coincides with the company's shift toward an institute model and toward extended international collaboration, and, as the discussion of institutional conditions above suggests, with a period in which commissioning capacity for work of this scale was not available in Yogyakarta.

Four Operative Systems in Waktu Batu Rumah yang Terbakar (2023)

The fourth production, presented at Artjog in the Jogja National Museum, is the first in the cycle in which the technology responds. Four systems are in operation, and they should be distinguished from one another because they do different work.

Vocal processing and the voice as data

The vocal processing system modulates the performers' speech toward a synthetic register. Its effect is not to conceal the performers but to make audible the fact of processing. What the spectator hears is neither an unmediated voice nor a recorded one but a voice being transformed in the present tense. The device is Brechtian in its structure — it interrupts identification — but its content is specific to a digital condition: it stages the voice as data undergoing operation. A member of the production team confirmed that the chain is routed live from the performers' head-worn microphones rather than triggered from pre-rendered files (production team member, personal communication, 8 July 2023), which is what distinguishes this system from the sampled sound of the 2004 production.

The interactive game and the instrumented loop

The interactive game component distributes controllers among audience members, whose inputs affect projected material. This is the point at which the autopoietic loop becomes technologically instrumented: spectator action now enters the performance through a channel the production has built for it. The significance is qualified, however, and should not be overstated. The available choices are bounded by the game's design, and the loop that results is narrower than the diffuse, continuous responsiveness that Fischer-Lichte (2008) describes as operating in any co-present performance. The production makes participation explicit and, in doing so, makes visible how constrained it is. Bishop's (2012) analysis of participatory art — that formalised participation frequently substitutes the appearance of agency for its substance — applies directly, and the production appears to court rather than evade this reading. The finding here qualifies Fischer-Lichte's account in a way her own material did not require: the loop is not only widened or narrowed by the disposition of the audience, but can be engineered, and engineering it makes it smaller.

The kinetic camera and immediate repetition

The kinetic camera records performers in real time and projects the result within the same space. The spectator sees the body and its image simultaneously and can compare them. This is the production's most direct engagement with the problem of reproduction, and it is worth being precise about what it does. It does not replace the body with the image, nor does it assert the body's priority over the image. It holds the two in a relation that the spectator must manage, and the labour of that management is, by inference from the author's own attendance, part of the experience. Read against the earlier discussion of repetition, the camera institutes a repetition that is immediate and mechanical rather than trained and inherited: the image repeats the body instantly, without mastery, without tradition, and without the possibility of error that gives ritual repetition its stakes.

The projection environment and the volumetric image

The projection environment is the production's most striking visual achievement. In the sequence built around a family meal, a fogger fills the stage and a projected lattice of green lines is cast into the fog and onto the surrounding surfaces. The lattice reads as flat on the walls and as volumetric in the fog, and the performers appear enclosed within a structure that has no material existence. From the author's attendance, the effect is spatial rather than pictorial: the light acquires apparent density. The dramaturgical import is legible without decoding — a domestic scene proceeding inside an invisible enclosure — and several published reviews reached substantially this reading independently, which is the strongest available corroboration short of audience research. It is worth noting that the effect depends on a fogger, a nineteenth-century device, as much as on the projector.

Uneven Transition, Perceptible Difference, and Two Orders of Repetition

Three findings follow from the analysis. The first concerns the shape of the transition. The cycle's movement from analog to digital was neither linear nor complete. The 2003 production introduced mediation without programmability; the 2004 production introduced programmability without responsiveness; only the 2023 production is responsive, and even there the response is narrowly channelled. The cycle does not show theatre becoming digital. It shows a company adopting particular technical capacities at particular moments for particular dramaturgical ends, and retaining analog means throughout. This qualifies the periodising narrative that organises Dixon's (2007) history, in which digital performance emerges as a successive phase; in this case the phases coexist, and the production's most admired effect depends on the oldest device in the room.

The second finding concerns presence. The fourth production does not support Auslander's (1999) strong claim that live and mediatised performance have become equivalent. The production is constructed so that the difference between the body and its image remains perceptible and consequential; the kinetic camera would have no dramaturgical function if that difference had collapsed. Nor does it support Phelan's (1993) contrary claim, since the production's meaning depends substantially on reproduction rather than resisting it. Fischer-Lichte's (2008) account fits the material better than either, but requires the qualification established above, that the feedback loop can be technologically narrowed as well as widened. Auslander's (2012) later position, in which liveness is a relation rather than a property, is compatible with what is found here, and the explanation for the divergence from his earlier position is contextual: the Indonesian independent sector does not stand in the competitive relation to broadcast media from which the equivalence thesis was derived.

The third finding concerns aura, and returns to the argument advanced earlier. The relevant transformation in this material is not the decay of an auratic uniqueness. It is a change in the kind of repetition the theatre performs. Ritual repetition, in the Javanese traditions on which the cycle draws, is trained, fallible, and authoritative precisely because it can be done badly. Computational repetition is instant, exact, and carries no stake. *Waktu Batu Rumah yang*

Terbakar places these two orders of repetition on the same stage — performers working within an inherited physical vocabulary, machines reproducing them without effort — and the friction between them is the production's substantive content. This is not the problem Benjamin (1969) posed, and describing it in his terms obscures it. It is, however, the problem Jompet Kuswidananto's installation had already staged in another medium, which suggests that the finding is not an artefact of this single case.

CONCLUSION

The technological development of Teater Garasi's *Waktu Batu* cycle was an uneven and dramaturgically motivated adoption of technical means rather than a progression toward the digital. Mediation entered the cycle in 2003, programmability in 2004, and responsiveness only in 2023, and analog means were retained at every stage. In the fourth production, four distinct systems perform four distinct functions, and the relation between the body and its image is held deliberately unresolved rather than collapsed in either direction. Digital technology in this cycle does not dissolve theatrical presence; it places presence and its mechanical double on the same stage and leaves the spectator to manage the difference.

On the theoretical question, Benjamin's aura thesis requires substantial modification before it can do useful work on this material. Its premise, that authority resides in unrepeatable singularity, does not describe a performance culture in which authority resides in correct repetition. The productive question in such a context is not whether aura survives reproduction but what kind of repetition a given technology institutes, and how that repetition relates to the trained and fallible repetition of ritual practice. Auslander's equivalence thesis likewise fails to describe a production whose dramaturgy depends on the difference it claims has disappeared. Fischer-Lichte's autopoietic loop proved the most serviceable of the frameworks tested, subject to the qualification that instrumented participation can narrow the loop it appears to extend. The contribution offered here is that revised question, which is portable: it can be put to any local performance culture in which authority is carried by reiteration, and it yields a description that the aura thesis cannot.

For practitioners and curators the implication is concrete. A production that places computational and trained repetition side by side gains its force from the audibility and visibility of the difference between them, and technical decisions that smooth that difference away — cleaner processing, tighter synchronisation, more seamless projection — remove the very friction that carries the meaning. For the institutions that commission such work, the finding that responsiveness required a nineteen-year gap and a festival budget is a statement about capacity rather than about artistic intention.

The study's limitations are clear. It rests on a single case, and on documentation that is markedly thinner for the earlier productions than for the later. It contains no empirical audience research, and its claims about spectatorship are inferences that further work should test. Two lines of research follow directly. Comparative study of digitally engaged companies outside Yogyakarta and Jakarta would establish how far the institutional conditions described here shape aesthetic outcomes; and systematic audience research, ideally combining post-performance interviews with attention tracking during the instrumented game sequence, would put the participation claims on firmer ground. Both are needed before the account offered here can be generalised beyond the case it examines.

ACKNOWLEDGMENT

The author thanks Teater Garasi / Garasi Performance Institute for access to production documentation and for the technical clarifications recorded in the Method, and the Indonesian Visual Art Archive (IVAA) for access to archival recordings. Thanks are also due to colleagues

at the Jurusan Teater, Institut Seni Indonesia Yogyakarta, for critical discussion of earlier drafts, and to the two anonymous reviewers whose comments substantially reshaped the argument of this article.

DECLARATIONS

Funding. This research received no external funding.

Conflict of interest. The author declares no conflict of interest. The author has no financial, professional, or institutional relationship with Teater Garasi / Garasi Performance Institute, with Artjog, or with the artists whose work is discussed.

Ethical approval and informed consent. No institutional review board with jurisdiction over arts research operates at the author's institution. Written permission for the use of production documentation was granted by Teater Garasi / Garasi Performance Institute. The two members of the production team cited as personal communications gave informed consent to be cited by role. No images of identifiable persons are reproduced, and no consent to publish images was therefore required.

Data availability. The author's field notes and the coded description of the four technical systems are held by the author and may be consulted on reasonable request. The archival recordings of the 2003 and 2004 productions are held by the Indonesian Visual Art Archive (IVAA), Yogyakarta, and are consultable on the archive's own terms. The company's documentation of the 2023 production is held by Teater Garasi / Garasi Performance Institute and access is at the company's discretion.

Use of generative artificial intelligence. No generative artificial intelligence tool was used in the conception, research, analysis, or drafting of this manuscript. The author takes full responsibility for the content.

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