

## Lighting the lit: luminosity as protagonist in mediated performance

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### Introduction

The liquid-crystal-display (LCD) has become a part of everyday life for most of us and over the past decade developments in mobile technologies, the internet and wifi have meant that we spend more time looking into screens. Through these developments our relationship to light has fundamentally changed. A far greater proportion of the light our eyes receive is now directly from a light source. We look into light rather than use indirect light to allow us to see.

Elizabeth Grosz posits that; “Perhaps the most striking transformation effected by these technologies {the chip and screen} is the change in our perceptions of materiality, space and, information...” (Grosz, 2001). Grosz focuses mainly on the prevalence, availability and range of information and communication options now presented to us, and the way that these have impacted on our relationships and perceptions. This paper aims to approach the changes in our relationship to light effected by the chip and screen, and the way that these have impacted on our perceptions of space and information.

The focus is on what I will term *digital light*, light that is either generated by the use of semi-conductors rather than traditional lightbulbs (such as light emitting diode or LED), or light that hosts or projects content (as seen in mobile phone displays and data-projectors).

Lighting designer Richard Cadena acknowledges in his book ‘Automated Lighting’ that digital lighting is different to other lighting tools available to the designer. However, he finds it hard to articulate exactly where the difference lies; “Is it the content, the light engine, the control mechanism?” (Cadena, 2006). To an extent, it is all of the above. There are several factors that have led my research to single out digital lighting as a new ‘voice’ in lighting and performance practice.

Key aspects of the physical behavior of digital light have presented new opportunities for artists and technologists in the application of these fixtures. LED fixtures, for example, are cool to the touch offering potential for closer proximity and integration to scenic and costume design. For lighting designers, limitation in the throw (luminous efficacy) of LED directly impacts positioning and purpose. The complexities of the control mechanisms for digital lighting mean that new language is applied in their use. Concepts and terminology from graphic design and computer sciences such as pixels, refresh rates and content are now in the lighting designer’s domain. Yet despite these fundamental differences that working with digital light brings, lighting designers, directors and artists continue to approach digital light and apply it in familiar paradigms of twentieth century scenography.

### The Duality of Digital Light

A very common issue when working with projection in performance involves the ambient light required for the live work negatively impacting the rendering of the projected image. When using a live camera feed to projector, this is made further complex since the live action must be well lit in order to be captured by the camera and projected. This led me consider the concept: lighting-lit.

The lighting-lit echoes Susan Kozel's discussion of Merleau-Ponty's relation of reversibility. The "seeing seen" and "dancing danced" existing in the dichotomy of an action which also becomes a new object in its execution.

Throughout my research to date, this notion recurs with respect to digital light. In the example of the live camera feed to projector, the lighting (projection) cannot exist without the lit (visible performers) and the lighting must surrender to the lit. In examining digital light through this lens, the difference between 'generic' lighting and digital light becomes clearer. Projection is lighting, it illuminates, it has beams, it has texture, it travels. It is also the 2D lit surface or object of content. An LED par can is lighting, again it exhibits properties of the action of illuminating. It is also a lit object, often positioned to be viewed in its own right. A common practice of lighting with LED fixtures is to use them as what is termed 'eye candy' in the industry. Lighting that is to be viewed, to be attractive to the eye, to distract and perform as an object in itself. Digital lighting frequently exhibits itself as an object through the process of its action.

The duality of digital light is what sets it apart from generic theatre lighting. As Kozel states; "this dynamic [the seeing-seen] helps rework the relation between bodies and media technologies by overturning the suggestion that the digital image is merely a visual representation of the world" (Kozel, 2007). I am interested in the ways that digital lighting can affect movement, the body and instigate change in the performance space. While many mediatized productions play heavily on visual media as representation and suggestion, my research seeks to explore not only the visual and pictorial aspects of these technologies, but also the spatial and sensory implications.

Through an understanding of the behavior elicited by this duality, the digital light can tell us more about materiality, space and information. Could the experience of digital light and a methodology for working with it potentially expand scenography and provide theatre makers with a new medium with which to access the window of the virtual? The virtually lived areas of our lives are frequently inhabited in light – in phones, in tablets, in screens. In a related reversal, could we use this light as a window establishing a link between these spaces and the embodied reality of performance?

### **Emerging Never Arriving**

*Emerging Never Arriving* was a collaborative choreographic project. PhD researcher Alan Duffield from the theatre and drama department of Royal Holloway College worked with 6 dancers over a two month period, during which I was invited to workshop a technological element. Following the workshop a series of solos and duets were developed and a selection of phrases were then interrogated further with the addition of camera and portable lighting. I asked the dancers to highlight one part of their body or movement by presenting it close up to the live feed camera. The resulting images were projected behind the performer across the remaining group. This first sequence produced an intense and intricate visual discussion of notions of foreground and background, in frame and out-of-field. What occurred in the live performance space during this project was an unusual situation of having the frame projected in the background, while the out-of-field remained prevalent in the foreground. The digital light of projection, together with camera technologies, created a space within the performance space that relegated the camera frame and brought to the foreground the mechanisms of the live capture. In viewing the projected close-up image, awareness of the action creating this image was raised. The lighting producing a lit space, a window of virtual space making more clear to us the 'real' space in front of us. This caused me to consider relationships between notions of the digital, analogue and virtual.

While Massumi writes that, “the body, sensor of change, is a transducer of the virtual” (Massumi, 2002) he posits that; “Sensation, always on arrival a transformative feeling of the outside, a feeling of thought, is the being of the analog. It is matter in analog mode. This is the analog in a sense close to the technical meaning, as continuously variable impulse or momentum that can cross from one qualitatively different medium into another.” (ibid) The close relationship between the analog of transformed and transduced sensations and the virtual suggests strongly that there will also exist such procedural links between the digital and sensation. The virtuality of the content of digital lighting insists that there is the potential for change and transformation in the movement and empirical experience of such lighting.

Massumi challenges this discussion by stating that; “nothing is more destructive for the virtual than the digital...” (ibid) He asserts the importance of the difference between the virtual and the digital, in order to address the common misconception that they are the same. While I can see Massumi’s point, I would suggest that the digital does belong to the virtual in that it belongs to analogue, experience and the haptic.

Digital processes must be transduced through analog processes in order to be experienced and understood by the body and the mind. The virtual concerns the fleeting, the transitions and the sensations associated with the almost but not quite complete. You need only to consider the notion of refresh rates and the moving image to see that the digital realm relies on the virtual in order to exist. No sooner than an image is sent or created it is re-sent, re-rendered, looped back upon itself. In order to create movement, the digital partners with the virtual. As Massumi states, “the virtual is in the ins and outs, the only way an image can approach it alone is to twist and fold on itself, to multiply itself internally” (ibid).

The codification of content and light that defines digital light results in a relationship with the virtual. Both of these produce an analog experience of light. However, this light differs from incandescent light in the relationships in its creation; relationships to frame, content, code, notions of technology. But are there physical differences too? Why do some people say that LED light and projected light ‘feels’ different? There may be something to do with the ‘haptic’ here. In the sense of “a synesthesia proper to vision: a touch as only the eyes can touch” (ibid). These properties of digital light are to be explored further in future investigations.

## **Retroduction**

A further example of how changes in relationships alter the language and experience of digital light can be demonstrated through a second sequence from *Emerging Never Arriving*. In a second sequence, dancers were asked to reprise their solos from earlier in the piece, but this time to hold a battery powered LED light and highlight parts of their movement or body. The dancer was followed by another holding the live feed camera who was asked to focus on the LED lit movement. These instructions addressed two points. Firstly, the need to provide sufficient illumination for the movement to be read by the camera. Secondly, to explore a non-traditional lighting technique.

While the first camera-focused sequence provided content for digital light as large scale projection, the second sequence introduced a diode generated light source with no mediatized content to the scene.

Sequence one demonstrated the way that digital light and the context of its content can create new spaces and visual relationships on the stage. Sequence two returns us to the notion that digital light can have a different voice to generic lighting.

In reworking the relationship between the body and technology, this sequence saw digital light take the role of protagonist in the visual dialogue. In illuminating a particular part of the body or

movement, the LED fixture became a lens, directing and drawing focus both in the live space and for the camera and subsequent projection. The 'frame' created by the LED isolated and redefined the body, showing us the same movement but in a new way, touched by, altered by the digital light. The movement of the light, directed by the dancer, also created a new set of movement on the stage as the light shifted across the space, throwing dynamic shadows and altering those existing.

Massumi proposes that tracing the pathway of movement opens up opportunities to re-trace, to take a retrospective journey along the trajectory and that this can be a; " "retroduction": a production, by feedback, of new movements" (ibid). Using this notion as a methodology, could retracing the pathways of digital light reveal to us the nature of digital light's movement and notions of affect on performance?

The second technology sequence in *Emerging Never Arriving*, offers a practical exploration of a possible "retroduction" of lighting. A retrospective journey along movement traced by camera, LED lighting and projection creates a feedback loop presenting to the viewer a new set of movement and dynamics in a space and frame that communicate with a different vocabulary to the live performance.

The retrospective journey along the movement of the solo focused or framed by the LED light is reproduced through the camera presenting a microcosm or framed analysis of the dance. Fed back to the viewer (and to the other dancers) via projection, presenting the live movement but seen through the lens of the light. Presenting a new set of movement and dynamics in a space and frame that communicate with a different vocabulary to the live performance.

The camera allows us to view the frame created by the light as the camera does not compensate for the intense contrast of the LED like our eyes do. This feedback presents the new frame alongside the existing diffuse frame of the light in the live foreground.

But how does this retroduction allow us to examine movement? What does it offer us? Responses from the dancers provide some indications of the affect of the digital lighting vocabulary<sup>1</sup>. The reframed movement shows us shape and shadow that would not ordinarily be seen. The retroduction shows us every fold, every shift, every glance and change in velocity. The detail is not only limited to the projection space, LED light also provides a highlighted or framed view in the live foreground. Much of the movement and dynamics is presented here in the contrast of moving light and shadow.

In LED lighting where the light is both lighting and a lit object the feedback loop is complex, as is its relationship with the movement, objects and the space. The retroduction of this movement involves the movement/shift of the gaze, as well as the source movement from the content. It separates and isolates the focused frame and highlights changes in speed and time.

### **What's so special?**

The question has to be asked; couldn't this have been achieved with incandescent light? In theory, yes the basic circumstances of a dancer moving with a light could have been created with incandescent light. While an ordinary light bulb would be too delicate to move around, a halogen torch could have been used. However, this returns the discussion to what it is that defines digital

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<sup>1</sup> "The space became much bigger when using the projected images, especially the live camera feed, as it felt like we were surrounded by the dance we were creating. I felt that it especially impacted our group dynamic: the relationship and attention we held between us. I found it completely absorbing as a dance space because you were free to observe as well as be a part of it, free to see the patterns and relationships between different images across the space as a whole, and strengthen the performance of a solo by being witness to it not once but three times; through flesh, shadow and film.....What was crucial here was the projection of the solo as it happened, as it gave us so many points to watch as we moved; we could shift between watching the dancer at work, watching the solo on screen and watching the play of light and shadow over the whole studio."  
Sarah Richter-Rose (dancer)

light and sets it apart. If a torch were used, the light emitted would have had different physical properties, both in the way that the light itself behaves and is seen, but also in the suggestive or semiotic language it portrays.

In theatre lighting, lights that are used on stage, within the 'action' are usually representative of a naturalistic or utilitarian use. Referred to as 'practicals' these lights appear as or suggest their real-world use. For example a table-lamp or street light. They imply context or purpose and often speak directly to the narrative or the atmosphere of the performance. Digital light, I would suggest, still retains its own 'signature'. The means by which the light is generated – be it by diodes or manipulation of polarizing lenses and so forth – produces an 'ethereal' quality to the light. Screens bathe us in a blueish hue, tinting our skin and stimulating our eyes and brain. LED's scatter light and create shadows in a very different way to an incandescent lamp. They are subtle in their movement, sometimes indistinguishable in their reach. The shadowing created by LED is frequently multiple, with lower contrast suggesting ghostly figures or abstract shapes and movement.

Ultimately the difference between digital light and that of traditional or incandescent sources is the way that we work with it. Our relationship to digital light differs in the ways that we use it. As a technician and designer I interface with digital light at a more complex level than I do with traditional lighting where I deal mainly with levels of intensity and angles. As performers and directors digital light presents you with content and information (both on a cognitive and experiential level). Digital light is frequently positioned where traditional lighting is not, and this forced new presence requires acknowledgement.

If the differences and challenges that digital lighting presents to us are so deeply rooted in our relationships and physical responses, surely it then follows that this lighting is a different voice on the stage? As such it is a language that needs to be explored and acknowledged rather than simply forced into the paradigm of traditional lighting. Even in ignoring the digital screens and worlds created on our stage, we surrender a level of power to this light. It has a presence that cannot be ignored since it affects our understanding of space, time and information. Digital light is a protagonist on the stage – it alters situations and creates new ones, it can lead the action and it can direct the audience to new understanding and experiences. Our challenge now becomes how to work with this developing force on the stage, how to understand and respond to our relationships with it.

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## Bibliography

Cadena, R (2006) *Automated Lighting: The Art and Science of Moving Light in Theatre, Love Performance, Broadcast, and Entertainment*. England, Focal Press.

Grosz, E. (2001) *Architecture from the Outside: Essays on Virtual and Real Space*. Massachusetts, MIT Press.

Kozel, S (2007) *Closer: Performance, Technologies, Phenomenology*. Massachusetts, MIT Press.

Massumi, B (2002) *Parables for the Virtual: Movement, Affect, Sensation*. Duke University Press, USA.