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Art Involving Computation vs. Computational Art

As in many other areas of contemporary life, computation has increasingly found its way into art. But the adoption of computational media by artists has taken on quite different forms, especially if we are to contrast approaches within the sphere of media art with those of the traditional, mainstream art world. Computational processes may be used to drive the aesthetic and conceptual dimensions of artworks, while playing a more pragmatic role in the execution of other works. In the same sense that arguing for the superiority of any medium over another is relatively futile, neither of these approaches is necessarily preferable nor superior to the other. But the polarity posed by these different perspectives on the role of computation in art allows us to consider a range of contextual factors that are relevant to current methods and ideas about contemporary art. This essay gives a brief introduction to various perspectives on the role of computation in art, contrasting traditional perspectives with those specifically engaged with the affordances of media and technology. Connecting these ideas to the exhibition *Espaço/Programa*, it explores several open questions that may help us better appreciate the extent to which computation may be integral to a work of art.

Following Miguel Carvalhais's definition:

Computational art centres on the aesthetic relationship in computation. Its definition does not hinge on using computers or computational

media instrumentally to produce art and to simulate media or tools, as this would be too encompassing, but rather on how pivotal and meaningful *computation itself* is for the artworks and the aesthetic relationships that we develop with them.¹

We may think of the exhibition *Espaço/Programa* as a practical exploration of this definition, presenting various interpretations of what computational art can be. While the exhibition is explicitly focused on computational art, it's not merely a room filled with computers, as one might find in a show with a more archival focus. As Carvalhais points out, computational art is not limited to the participation of digital computers, making it in some ways ephemeral and potentially difficult to pin down. In each of the works, computation plays an important role in how the work is experienced and interpreted, but there is no standard way of engaging with computational processes. This may complicate our ability to strictly delineate computational art from other forms of art, but this complexity may offer insight in its own right.

In interdisciplinary work bridging art and technology, there can be very different ways of talking about and of thinking about the same things depending on the context and the discipline – or disciplines – one approaches from. Variations in the use of language and our approaches to certain concepts across fields



can sometimes be very telling about aspects we might not otherwise notice from within the bounds of a specific discipline.

There is an interesting tension, for example, between what I have started to think of as “art involving computation” and computational art. The way computation is framed in traditional, mainstream perspectives on art is often quite different from how it is seen in media art.

The term, “media art” can refer to the use of “new media”,² such as electronic media, film and technology, broadly, in art, and drawing of meaning from the medium of execution of artworks. For example, in many media artworks, it matters deeply that viewers know background information about the process and the medium employed in a work in a way that is integral to its interpretation. One way of looking at this is to acknowledge that media art has historically had a tendency to fetishise technology. But even this emphasis on media and process doesn’t help us draw any distinct boundaries between media art and other art. Instead, there are stylistic, technical, and discursive differences between these two spheres. The boundaries between “media art” and “art” are fairly nuanced and actually have to do more with quite subtle tendencies and contextual factors than with any coherent defining traits in the works themselves. As Lev Manovich points out, many “new media”, such as digital com-

puters, are no longer new.³ And computation exceeds the direct involvement of digital computers. He says:

There is no reason to privilege the computer as a machine for the exhibition and distribution of media over the computer as a tool for media production or as a media storage device.

All have the potential to change existing cultural languages. And all have the same potential to leave culture as it is.

Not all art involving computers is especially computational. For example, we can take a picture using a digital camera or generate a digital image using software, involving computational processes in the production of the image. But when we print out the end result of such computational processes, the outcome may become less dynamic and place less emphasis on the execution of computation than the digital version of the same image, making it more static and fixed.

In some artworks, for example, the fact that they involve computational processes adds little to our experience of the work or its intended meaning. For example, in some generative practices, computation is merely a way of producing meaningless variation. This is in contrast to, for example, using generative strategies to use variation in a more exploratory or semiotic

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capacity. In this sense, although art may involve advanced forms of computation, the computational aspect of the works may in some cases feel incidental, actually falling back on extremely conservative perspectives on what art can be or do.

This particular kind of approach, of art that merely involves computation, as opposed to foregrounding it, can be applied in relatively uninspiring ways. But at the same time, I don't want to rule out the use of computational media as merely a substrate, because it has potential to be used in more compelling ways. The medium or process employed in a work may be simultaneously important to the meaning and experience of the work, without the work needing to necessarily be *about* computation. Somewhere between art involving computation and computational art, the technology maybe seen as non-neutral, a typical oversight of traditional art perspectives, while also not being fetishised, going against media art's preoccupation with the importance of the medium of a work's execution.

While I hesitate to propose a conclusive, defining boundary between art involving computation or computational art, I will close this text with a few questions that I believe can help us to explore the grey area between them.

Is a computational process integral to the work?
Or is it incidental?

Could the medium or technique employed be changed without affecting the meaning of the work?

Does computation drive a work, contributing to the construction of meaning and experience?

What difference exists between art that merely involves computation and computational art?

Exploring the tension that exists between the polarities of art involving computation and computational art seeks to foreground practices that provoke consideration about what computation does — aesthetically and conceptually — in art.

1. Miguel Carvalhais, *Art and Computation*. Rotterdam: V2_Publishing, 2022, 14.
2. Lev Manovich, *The Language of New Media*. Cambridge: MIT Press, 2001.
3. *Ibid.*, 19.