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A Brief Introduction to Decolonial Computing*

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Does computing need to be decolonised, and if so, how should such decolonisation be effected? This short essay introduces a recent proposal at the fringes of computing which attempts to engage these and other related questions.

1. Introduction

Does computing need to be decolonised, and if so, how should such decolonisation be effected? What these and other related questions point to is the possibility that computing is – or at least *should be* considered as – a colonial phenomenon. 'Critical' positions such as feminism and disciplines such as science and technology studies (STS) afford insights into the social, economic, political, cultural and other factors impinging on computing as an entangled outgrowth of various developments within fields such as logic, mathematics, science and technology. Yet surely it is somewhat of a stretch to describe computing as 'colonial', especially since colonialism as a phenomenon tied up with imperial structures of domination and settlement is a thing of the past? How *can* computing be colonial if the 'age of empires' is over and we live in a postcolonial world?

In order to motivate engagement with the idea of computing as a colonial phenomenon, it is necessary to 'excavate' the history – or rather, *genealogy* – of modernity, and one way of proceeding in this regard is to consider the formation of the contemporary world system in terms of its socio-political ontology (that is, its nature or being).

2. The Modern/Colonial World

According to seminal world system theorist Immanuel Wallerstein, the history of the modern world-system has been in large part a history of the expansion of European states and peoples into the rest of the world, commencing with the so-called Columbian 'voyages of discovery' in 1492 CE which resulted in the emergence of a capitalist world-economy. In order to understand the nature of this expansionist project, two key terms require unpacking – *colonisation* and *colonialism*.

'Colonisation' (from the Latin *colere*, 'to inhabit') refers to an ongoing process of control by which a central system of power dominates surrounding lands and their 'resources' (people, animals etc.) through a process of 'settlement', i.e. establishment of a colony. *'Colonialism'*, by contrast, refers to the establishment, exploitation, maintenance, acquisition, and expansion of a colony in one territory by a political power from another territory. Crucially, it

involves a set of unequal relationships between the colonial power and the colony, and between the colonists – or colonisers – and the indigenous population – or colonised. We might summarise the difference by saying that *colonisation* tends to refer to expansionist migration – for example, to settler colonies in America or Australia, the establishment of trading posts and plantations etc. – while *colonialism* covers this situation along with the ruling of the existing indigenous peoples of so-called 'new territories'.

In its modern form, colonisation involved the spread of tens of millions of Europeans around the world, so much so that in many settled colonies, European settlers formed a large majority of the population. Such settlement involved both expropriation of land, labour, materials and knowledges, and the genocide of indigenous peoples and enslavement of others – specifically, Africans. The modern colonial project commenced with the voyages of the Spanish and Portuguese empires in the late 15th century which were later augmented by other European imperial ventures – French, Dutch, British and Danish in the 17th century, and German and Belgian in the 18th century. By the 1930s, "[European] colonies and ex-colonies covered 84.6 per cent of the land surface of the globe" (Loomba 2005, p.3).

An important – arguably *categorical* – difference between European colonialism and 'classical' or pre-modern colonialism is that, according to Wallerstein, European colonialism brought forth a world system constituted by a European 'core' and non-European 'periphery': the 'modern' world of global capitalism marked by an ensemble of socio-cultural norms, attitudes and practices that can be traced to Renaissance and Enlightenment developments within Europe, and which culminated in a commitment to liberalism as the legitimising political philosophy of dominant states within an emergent inter-state system. Yet while liberalism might be the defining self-narrative of modernity, it must be reiterated that colonialism is its 'dark' (occluded, obscured) constitutive 'underside'; in short, there *is* no modernity without colonialism.

Colonialism as a project of European political domination involving settlement *formally* ended with the national liberation and independence movements of the 1960s. Yet the modernity which colonialism engendered persists, albeit transformed under the condition of postmodernity, which has meant the persistence of certain 'sedimented' colonial ways of knowing and being – that is, colonial epistemology and ontology – based on systems of categorisation, classification and taxonomisation and the ways that these are manifested in practices, artefacts and technologies.

3. Modern/Colonial Computing

If the genealogy of the modern world system sketched above is broadly correct, then it follows that computing is necessarily colonial *insofar as it is modern*. In this connection, HCI theorists and practitioners such as Paul Dourish and Scott Mainwaring (2012) point to the expansionist outreach of ubiquitous or 'pervasive' computing (ubicomp) as driven by and exemplifying a 'colonial impulse'. However, while endorsing the basic soundness of their argument, it is important to situate this *specific* development in relation to a more *general* 'expansionist' thrust of computing associated with the transformation of the modern world through incessant 'computerization' and the rise of a global 'information society' following the 'cybernetic turn' of the 1950s. According to existential philosopher Martin Heidegger (1889-1976), this 'turn' marks the culmination of the different historical understandings of *'being'* in Western culture, and manifests as the endless transformation of information from one form

to another, which Heidegger described in terms of a relentless movement of inter-connected 'stock-piled' resources or 'standing-reserve' (*Bestand*) including the human.

His account might be extended to incorporate subsequent 'iterations' – and perhaps also *intensifications* – of the 'cybernetic turn' in the form of computationalism and the recent algorithmic shift to 'Big Data' etc., all of which arguably point to something *essential*, albeit *historically*-essential, about computing as technological-modernity when viewed from modernity's occluded, obscured and ignored 'underside'. It is not so much that computing *has* a colonial impulse, but rather, as decolonial thinkers might argue, that it *is* colonial through and through.

4. Postcolonialism and Postcolonial Computing

One response to the colonial impulse of computing has been to argue for the articulation and adoption of a 'postcolonial' computing. According to Loomba (2005), "the prefix 'post' … implies an 'aftermath' in two senses – temporal, as in coming after, and ideological, as in supplanting." Crucially, she goes on to state that: "It is the second implication which critics of the term have found contestable: if the inequities of colonial rule have not been erased, it is perhaps premature to proclaim the demise of colonialism." (p.12) According to theorists associated with the discipline, in particular, early luminaries such as Edward Said, Gayatri Spivak and Homi Bhaba, the 'postcolonial' refers to that *condition* which arises following the formal dismantling of colonial structures, namely the persistence of the colonial legacy in various cultural forms, practices, histories and knowledge structures. Postcolonial *theory* refers to intellectual inquiry concerned with engaging this legacy from a 'critical' perspective, contesting colonial domination from the vantage point of formerly colonised peoples.

Postcolonial computing examines issues of culture and power at work in computing and ICT contexts including ICT4D, HCI and design methods (Irani et al. 2010) (Philip et al. 2012) and ubiquitous computing (Dourish and Mainwaring 2012). While recognising the constructive possibilities associated with such a project, there are a number of shortcomings with this approach which arguably stem from its grounding in postcolonial theory: for example, Loomba (2005) maintains that, "the relevance of postcolonial studies to our world continues to be questioned, both on earlier grounds of being jargonistic, somewhat depoliticised, and encouraging a rarefied approach to culture and literature, and on newer grounds of being unable to account for the complexities of globalisation" (p.1). She also points out that "postcolonial theory has been accused of … shift[ing] the focus from locations and institutions to individuals and their subjectivities" (p.20). In addition, and relatedly, there is a tendency within postcolonial theory to marginalise economic concerns. Perhaps most problematic, however, is that insofar as postcolonial theory grounds itself in the post-structuralist ideas of Foucault, Lacan, and Derrida, it leaves itself open to the charge of co-option into a project of critical transformation that remains *internal* to Europe; in short, postcolonial theory ultimately constitutes, at least epistemologically, a Eurocentric critique of Eurocentrism.

It is important to note that such theoretical shortcomings have been conceded, at least partially, by proponents of postcolonial computing.

5. The 'Decolonial Turn'

According to decolonial scholar Ramon Grosfoguel, the problem with postcolonial studies is that it conceptualises the capitalist world-system primarily in cultural, literary and historical terms, while the problem with world-system theory is that it frames it primarily in terms of economic relations. As a result, world-system theorists find it difficult to conceptualize culture while postcolonial theorists have difficulties conceptualizing political-economic processes. For this reason, Grosfoguel and other decolonial theorists advocate embracing '*de*colonial' thinking instead of *post*colonial thinking.

According to Peruvian sociologist, Anibal Quijano, colonialism has ended yet the postcolonial situation is still marked by a condition of *coloniality* that involves:

- An ongoing legacy of colonialism in contemporary societies in the form of social discrimination that has outlived formal colonialism and become integrated in succeeding postcolonial social orders
- Practices and legacies of European colonialism in social orders and forms of knowledge

Following Quijano, decolonial thinking takes its lead from Wallerstein's world-systems theory yet modifies it by re-conceptualizing analysis of the world system from the (Southern/Non-European) margins / periphery, rather than the (Northern/European) core. Crucially, however, this decolonial 'shift' retains the centrality of the long durée of the 16th century in tracing the genealogy of this system, but frames that genealogy as a globally-systemic 'colonial matrix of power' in which coloniality expresses itself through systems of hierarchies, knowledge and culture. Decolonial interrogation of the world system readily exposes what decolonial thinker Walter Mignolo refers to as the constitutive 'dark underside' of Western modernity as a colonial order in which *race* as naturalised, hierarchical (or taxonomic) exclusion, rather than capital, functions as organizing principle. According to Grosfoguel, this organizing principle structures multiple entangled asymmetric power-relations including, but not limited to, the epistemic, spatial, sexual, economic, ecological, political, spiritual and aesthetic.

This shift in thinking (the 'decolonial turn') involves what Walter Mignolo and Madina Tlostanova (2006, 2009) refer to as 'delinking' and border-thinking. That is, consideration of the 'body-politics' and 'geo-politics' of knowledge – that is, *who* is thinking / knowing and from *where* – engaging thereby with the *material* dimensions of epistemology in contrast to the abstract / disembodied 'theo-politics' and, following secularization, 'ego-politics' of universalizing Eurocentric epistemology by thinking from the margins (borders, frontiers, periphery). Such 'materiality' is not that of the race-less / de-raced structures of political economy or culture, but that of the corporeal experiences of those who have been excluded from the production of knowledge by colonial modernity. According to Mignolo (2010), decoloniality "is not an interdisciplinary tool but, rather, a trans-disciplinary horizon in which de-coloniality of knowledge and de-colonial knowledge places life (in general) first and institutions at the service of the regeneration of life." (p.11) Crucially, on his view, decoloniality necessitates integrating the concepts of coloniality, modernity, and decolonisation of knowledge by thinking about history (time) in relation to geography (space), thereby providing the basis for subjecting the idea of a single linear time and associated notions of 'progress' and 'development' to critique in terms of the operation of power, and motivating the shift away from a universal perspective towards a 'pluriversal'

perspective – that is, a worldview constituted from multiple sites of enunciation, pre-eminently those situated at the margins of the world system.

6. Decolonial Computing

In contrast to the postcolonial computing approach described earlier, and inspired by the 'decolonial turn' referred to above, the idea of a 'decolonial computing' has recently been proposed as a response to computing's 'colonial impulse' (Ali 2014). Grounded in a synthesis of the 'oppositional' critical race philosophy of Charles W. Mills and the work of decolonial scholars such as Mignolo, Grosfoguel and Maldonado-Torres, decolonial computing attempts to engage with the phenomenon of computing from a perspective informed by (even if not situated at) the margins or periphery of the modern world system wherein issues of body-politics and geo-politics are analytically fore-grounded. Put differently, decolonial computing, as a 'critical' project, is about interrogating *who* is doing computing, *where* they are doing it, and, thereby, *what* computing means both epistemologically (i.e. in relation to knowing) and ontologically (i.e. in relation to being).

Adopting a decolonial perspective enables a crucial difference between decolonial and postcolonial computing to be brought into bold relief, namely that early formulators of the latter position, such as Dourish and Mainwaring (2012), are completely silent on issues of 'race', as are other proponents of postcolonial computing who instead speak in terms of 'colonial', 'cultural' and 'power' formations. Another distinction between decolonial and postcolonial computing approaches is that the latter is also silent on questions of reparations. Athough Dourish and Mainwaring state that "the overriding question, 'What might we build tomorrow?' blinds us to the questions of our ongoing responsibilities for what we built yesterday" (p.6), the decolonial perspective requires us to interrogate the body-politics and geo-politics of the pronouns 'we' and 'us' in such statements. In short, and to paraphrase media theorist Wendy Hui Kyong Chun, we need to examine 'race and/as computing'.

In this connection, one landmark study that might be associated with decolonial computing is the dissertation by Mahendran (2011) exploring the emergence of race and computation in modernity, and their convergence in the contemporary postmodern era, in terms of the mind-body polarity as viewed through the 'lens' of existential phenomenology. According to Mahendran, "the historical idea of Man, as the secular human … developed through the violent devolution of bodily experience, in favour of detached calculative rationality, from which computation and race have emerged. This has placed Man over and against the natural world that extends beyond the mind, especially the body and others who are constituted outside the norm of Man [i.e. people of non-European descent]." Crucially, he argues that:

> This normative distinction between mind and body finds a more radical expression in Alan M. Turing's concept of the digital computer, a founding theory of computer science and information technology. On the one hand the digital computer decouples the bodily from existence, proof of the teleological development of a technological rational humanity. On the other hand, race limits existence to the bodily, as a fundamental barrier to humanity. It can be said that modern computation is the angelic ascent from one's body, while race is the hellish descent into one's body. (p.2)

While ground-breaking in its engagement with issues at the intersection of race and computing – more specifically, *computation* – and while hinting at the need to engage also with issues of religion and/or theology, Mahendran's argument needs augmenting in light of the 'embodied turn' within computing and cognitive science. Drawing upon Frantz Fanon's critique of the embodied phenomenology of Merleau-Ponty, Mahendran mounts a decolonial critique of *abstract disembodied* – that is, universal and formal – computing of the Turing-computational variety; however, this line of critique requires extending to cover *abstract embodied* – that is, universal and physical – computing. For example, ubicomp, at least as conceptualised in the phenomenologically-inspired approach to embodied interaction developed by Dourish (2001), invokes the figure of the body in the context of tangible, wearable, kinaesthetic, gesture-based and related computing technologies; yet according to Ali (2014), this is a somewhat 'abstract' conception of the body insofar as it is one that has been 'de-raced' – that is, rendered race-less. Decolonial analysis along body-political and geo-political lines readily discloses that such 'de-racing' tends to be effected, at least in the first instance if not thereafter, by theorists, designers, researchers, developers etc. who are 'white' (and male) and 'Western' – that is, situated within 'the Global North'. Understanding *who* is responsible for carrying out the de-racing of the body and from *where* is crucial because the 'abstract' body that is produced tends to be presented by the 'de-racers' *as* 'universal', thereby tacitly 'masking' or concealing (intentionally or otherwise) the particularity or specificity of this body; put simply, the abstract or universal body of ubicomp (and related disciplines) is arguably Eurocentric / Western-centric.

To reiterate: the 'embodied turn' within computing constitutes a movement from an *abstract disembodied* computing to an *abstract embodied* computing; however, this movement tends to pre-emptively 'bracket' or foreclose consideration of what might be described as 'the decolonial question concerning embodiment' (to paraphrase Heidegger). In addition, engaging issues of embodiment in terms of a phenomenology of *social* situatedness, where society is understood in terms of 'flat' or 'horizontal' relations between agents or 'full persons', obscures the operation of 'vertical' relationships between persons and 'sub-persons' that are racially-marked. Finally, and returning to the claim that ubicomp is driven by a 'colonial impulse', it is interesting to consider how the push to establish a global 'internet of things' is historically-founded upon a *prior* 'internet of things', viz. the international network of land, resources, and enslaved humans *as* objects (inhabitants of Fanon's 'Zone of Non-Being') situated in a colonised periphery constituted by colonising human subjects situated in 'the core'.

However, it is important to appreciate that the scope of decolonial computing extends beyond the critique of ubicomp – and HCI more generally – described above to include various other fields within computing such as AI and robotics, ICT4D, software and hardware design among others.

7. Further Decolonising Computing

More recent work in decolonial computing (Ali 2015), grounded in earlier work exploring reflexive engagements between information theory and critical race philosophy (Ali 2013), studies of the 'entangled' relationship between religion and technology and religion and information, and recent decolonial scholarship investigating the relationship between race and religion in the formation of the modern/colonial world system, together point to the need to expand the decolonial computing endeavour by including more explicitly 'religious'

considerations within its remit. According to Lloyd (2013), "race and religion are thoroughly entangled, perhaps starting with a shared point of origin in modernity, or in the colonial encounter. If this is the case, religion and race is not just another token of the type 'religion and,' not just one approach to the study of religion among many. Rather, every study of religion would need to be a study of religion and race." (p.80) Reflexively, it is suggested that every study of race would also need to be a study of race and religion, and insofar as coloniality is necessarily tied to race, racism and racialization, and computing is a modern/colonial phenomenon, it follows that computing must also be considered in terms of its relation to 'religion'.

In this connection, and further complicating the engagement of race and/as computing, albeit from a position informed more by a postcolonial rather than decolonial perspective, Ates (2012) entangles 'religion' by exploring "the long-term cultural dialectic between the rise of intelligent automata and the rise of Western discourses of Orientalism" in terms of "the interaction between the cultural Other as a systematic epistemological design and the technological Other of the European mind" which, he maintains, "converge in the archetypal apparatus of the mechanized mind concept" associated with cybernetics (pp.1-3).

8. Conclusion and Future Work

Computing is inherently colonial in some sense because, as a *modern* phenomenon, it is founded upon, and continues to embody aspects of, colonialism. This applies to specific kinds of computing such as ubicomp, which has been said to be driven by a 'colonial impulse', as well as computing more generally. While proponents of 'postcolonial computing' have pointed to the utility of certain ideas drawn from postcolonial studies for disclosing the persistence of colonial epistemologies – that is, colonial ways of knowing or 'coloniality' – in computing, discussions of the postcolonial condition tend to overlook the operation of global structural and institutional power in a racially-organised world system. 'Decolonial computing' is a recent proposal which attempts to rectify this shortcoming.

Practitioners and researchers adopting a decolonial computing perspective are required, at a minimum, to do the following: Firstly, consider their geo-political and body-political orientation when designing, building, researching or theorizing about computing phenomena; and secondly, embrace the 'decolonial option' as an ethics, attempting to think through what it might mean to design and build computing systems *with* and *for* those situated at the peripheries of the world system, informed by the epistemologies located at such sites, with a view to undermining the asymmetry of local-global power relationships and effecting the 'decentering' of Eurocentric / West-centric universals.

Decolonial computing is a very recent proposal at the fringes – or rather, *periphery* (borders, frontiers, margins) – of computing. It is presently somewhat under-theorised, informed by a commitment to decolonial praxis and what might be described as an 'open-source' techno-political orientation, asymmetries of power notwithstanding. It invites participation and contribution to its development while simultaneously being wary of co-option into the computing mainstream.

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Biography

Dr Mustafa Ali is a Lecturer in the Computing and Communications Department at The Open University, UK. His current research focuses on the development of a hermeneutic framework that can be used to inform critical investigations of computational, informational, cybernetic, systems theoretical and trans-/post-human phenomena. The framework is grounded in phenomenology, critical race theory and postcolonial/decolonial thought and is being used to engage with various areas in computing and ICT including artificial intelligence (the Turing test, situated robotics) and ubicomp (embodiment and social embedding).