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Abstract

World capitalism has become capitalism of abundance, but decadent capitalism. Today's capitalism, in its various forms, is potentially destructive of the planet on which we live. This text seeks to highlight some of the irrationalities underlying this destructive potential, taking the relation between tourism and innovation as a paradigmatic example. The conceptual, political and operational articulation of tourism with innovation is not an easy task to accomplish and there are many misunderstandings to block its desired symbiosis. It is also quite clear that innovation, namely that which is mediated and valued solely by market and economic and financial performance criteria, induces production and multiple consumption that have contributed to the acceleration of climate change and levels of unsustainability of the planet. Not all innovation is virtuous. This text has three objectives: to requalify the role of innovation in capitalist society, to reconceptualize the relationship between tourism and innovation and to identify some challenges that will test this relationship in the post-COVID-19 era. It is intended to help bridge the gap that exists between innovation and tourism, thereby contributing to the conceptual, analytical and political clarification that could allow tourism and innovation to be virtuously integrated.

Keywords: crises of excess, innovation, tourism, territorial singularity, ST.i, Giga-Sheds.

Introduction

The evolution of life on earth is based on an elementary principle. The existence of life requires the consumption of energy that is not always available in the most appropriate ways in view of the needs of survival. Therefore, the creation of an (efficient) model of energy production and consumption is a necessary condition for the existence of life and its proliferation. After several attempts, over the centuries, society has produced a model of energy extraction, production and consumption (EEPC) that has led us vertiginously to a scenario of climatic unsustainability and, therefore, economic, social and institutional unfeasibility. The current biological dimension of this unsustainability in Covid-19 is only one of its manifestations.

Historically, this EEPC model always involves some form of 'land grab' without it being possible to evaluate, unless it is too late, the impact on the planet's sustainability of the excessive valuation of private interests in the face of collective passions (Hirschman, 1977). The exploration and contemporary development of the tourism industry is one of the most paradigmatic cases of this general trend. Tourism, even before the COVID-19 pandemic, a true *black swan* (Taleb, 2007), was already under pressure, for economic, social and, the most difficult to hide, environmental, reasons. Its impact in the context of climate change has been recognized in the literature and there is an urgent need to tackle this problem, knowing the enormous economic and social impacts of such a challenge. Despite having its distinctiveness, tourism comprises the fundamental time-space 'distanciation' of capitalism's globalised 'structuration' (Giddens, 1984). However, due to its pervasiveness, we still propose to reconceptualize the concept of tourism in advance.

Accordingly, this article seeks to achieve two results, apparently asymmetric, but with a profound interdependence. First, it is intended to carry out a critical analysis of the way in which the nature of capitalism has been producing profoundly negative excesses for the economic, social and political sustainability of the planet. The relation between tourism and innovation is our lighthouse for analyzing a decadent abundance capitalism (Barzun, 2000). The second result is the development of the concept of ST.i, that is, a '*territorial singularity*' fuelled by '*territorial innovation*' and that allows innovation and tourism to be coherently and consistently integrated in a territorial framework. We piece together an alternative innovation platform for international tourism that is 'transversal' in that it exists in real and imaginably sustainable form. It complies with the key characteristic of innovation which is its re-combinant quality. It further enhances it by its drive to de-carbonise such innovation and implement a cognitively and practically sustainable alternative to the current and dated 'steampunk' model. We draw on relevant, sustainable industry and touristic practices and prospects from selected countries, but refer often to Portuguese needs, practices and conditions. This is because of its experience as a formerly hard-hit and fragile victim of past fiscal crisis in some need of an 'anti-fragile' touristic model (Taleb, 2012).

After this introduction, the text is organized into three sections. In the first section, it is suggested that there is a fundamental aspect that differentiates the nature of economic and social crises, taking the 20th century as a reference. In this context, it is argued that innovation has been playing the role of the global religion of capitalism and given its contribution to crises of excess, its role must be re-qualified. The second section deals with the reconceptualization of the relationship between tourism and innovation. The common denominator of this relationship is identified and, based on its content, the concept of territorial singularity expands to integrate tourism and innovation territorially. Finally, in the last section, from the understanding of the tourism dynamics in countries like Portugal in the last decade, a reflection is made about some challenges that tourism will face and that innovation may help to face. It ends with the conclusions and some clues for the future.

1. Innovation is no longer what it was!

The nature of crises, before and after the 20th century

The beginning of the 20th century changed the nature of crises. Until that date, crises were essentially those of scarcity: shortages of resources, time, threat of famine, equipment, essential services, and technology. Current crises are crises of excess in a society of unequal abundance in decline. Excess production, consumption, virtual and anodyne needs, applications, empty innovations of vacuous economic and social significance. Naturally, inequalities have always existed, whether in times of crisis or abundance. The fundamental difference is that in times of crises of scarcity, inequalities were inevitable, because the volume of resources was insufficient in view of the basic needs of the population. Currently, the existing inequality can be called political inequality, since its existence is associated neither with scarcity of resources nor with the technological solutions available on the planet. Not placing food and material needs above a threshold of decency is not an economic or technical impossibility, it is a political option.

We can start this brief narrative of the contemporary crisis by reference to a recent analytical portrayal of the emergence of the capitalist 'engine' as it transitioned from colonialism in the seventeenth century to full-blown imperialism in the nineteenth indicating where key contemporary tropes had their origins (Cooke, 2020c). The ultimate and universal feature of the exploitation of human energy to fuel the 'engine' in question is that it always involved and still involves some form of 'land grab' (Hechter, 1977). Here, new industrial capitalists frequently assimilated to the implantation of a capitalist agro-touristic pastoral landscape of luxury lifestyles for sublime contemplation founded upon aristocratic excess, commercial farming and animal-shooting for sport. An underclass of evicted tenants and subsistence smallholders formed an exploited service-class on the great estates. The dispossessed surplus population was often paid by the dispossessing landlords with 'assisted passages' for

emigration to colonial ‘possessions’. This was part of the ‘civilising mission’ that had pervaded the classical education of colonial functionaries Catholic or Protestant.

Class society is thus the fundamental vitamin of economic expansion. Only the nature of the ‘land grabs’ it feeds from has shifted from the muscle-power of the exploited to their presumed ‘narcissism’ in this era of ‘attention’ capitalism (Franck, 2016). It has also been termed ‘surveillance’ society for the ubiquity of information’s ‘presence’ in society and data aggregators’ insatiable appetite for personal identification data. This, of course, is ‘data exhaust’ which acts as Google and Facebook’s ‘surplus’ rendered to advertisers to accumulate further wealth. Definitionally, first, as Herbert Simon (1971) saw fifty years ago, ‘attention’ has the trait of scarcity (an economic value) but attention is also a basic human need (a psychological value). Commoditisation of the psychological value by exploitation of the economic value of attention is the definition of ‘celebrity’. Second, attention takes on metric value in the form of concrete and comparable ‘currency’ units such as ‘likes’, ‘recommendations’, ‘follower’ ‘influencer’, ‘engager’ and so on, typical of social media rating algorithms in Facebook, Instagram, and You Tube etc. Third, being a celebrity is sufficient to earn an income from attention capital: attention breeds more attention. Paying attention to a celebrity who returns a ‘like’; is correspondingly value-enhancing for the ‘follower’ too. In this transactional landscape the equivalent of the stock exchange, banks and the financial system are the media (mass and social). Fourth, and finally, as increasing amounts of attention are devoted to ‘auratic’ celebrity and consumption, so commoditisation mutates into ‘brands’. This produces a new form of social inequality, between celebrities who receive a surplus of attention, and those who get little attention (non-celebrities). As we show later, this explains the *addictive* power of social media, which seduces its ‘influencers’ and ‘followers’ with this ongoing and ever-intensifying struggle for attention. In Portugal, the Douro region was transformed into a British ‘fiefdom’ with the granting of monopoly rights to the fortified wine market for English Port wine merchants. Meanwhile, Madeira developed Port wine techniques of distinctive fortification and a monopoly, first of the Dutch then the British East India Companies, for sale in India. Elsewhere, Madeira boomed in burgeoning plantation markets such as Britain’s North American, Caribbean and African possessions and Portugal’s Brazilian and African colonies, amongst others. These were ‘innovations’ in mercantilism, monopoly and markets that fed the space-time distancing of auratic ‘grand tours’ and ‘imperial grand tourism’.

Innovation as the capitalist global religion

The capacity for innovation is now understood and widely recognized as one of the main determinants of the increase in productivity and competitiveness of companies, regions and countries (see, for example, Porter, 1985; Christensen & Lundvall, 2004; Tödtling & Trippel, 2005; Nunes & Lopes, 2015; Nunes, Lopes & Fuller-Love, 2017; Nunes *et al.*, 2018). Interestingly, as innovation became a fundamental part of the development of polarised and ‘decadent’ society, it

gradually lost its basic meaning, as process, product or service 'betterment', enhancement or social improvement and has become a kind of global religion, with associated reification, celebrification and adulation. Hence as addictiveness became a complement to the prevailing colonial imperative of 'discipline and punish' (Foucault, 1977) so obedience and quiescence became instruments for controlling the established social order of potentially turbulent slave, indentured or otherwise dependent but oppressed societies. The consolations of tobacco, Port wine and Madeira for the aristocracy with poteen or 'moonshine' and a pipe for the peasantry could be the difference between enjoyment, endurance or escape for both, where possible.

2. Tourism and innovation: mistakes in a relationship that was never what it was thought to be

The Question of 'Aura' in Aesthetics and the Issue of 'Auratic' Tourism

In what follows we will summarise the discontent, which was first seriously aired by Walter Benjamin (1973; first published, 1935) in his reflections on 'The Work of Art in the Age of Mechanical Reproduction'. Benjamin considered 'aura' to be representative of a 'cult image'.

'The definition of the aura as a 'unique phenomenon of a distance however close it may be' represents nothing but the formulation of the cult value of the work of art in categories of space and time perception...This is particularly apparent in the collector who always retains some traces of the fetishist and who, by owning the work of art, shares in its ritual power' (Benjamin, 1973).

Benjamin explained how Marx's critique of capitalist development showed what could be expected from it in the future, which would entail the exploitation of the proletariat with increasing intensity, but that this would create the conditions which would enable capital itself to be abolished. This is clearly a standard interpretation of the possibility of the overthrow of capitalism by the gathering force of the exploited proletariat. But not even Marx or Benjamin, his interpreter, foresaw or expected that capitalism would, by dint of the external environmental and pandemic conditions of late capitalist globalisation, abolish itself. This, arguably more or less temporarily, but with debts, furloughing and deep recession looming, is how the crisis could clearly evolve into a long emergency. The fact that tourists, rather than miners or steelworkers, were the direct cause of the current disruptions is a further irony of the spatial and temporal fates of prodigious proportions. For tourists were amongst most of the initial carriers of the SARS-CoV-2 virus.

Moving on and helping us towards our scenario of post-coronavirus tourism, we note Crang's (2013) recalling of Don De Lillo's (1985) novel *White Noise*, which features 'The Most Photographed Barn in America.' The barn in question turns out to be a simulacrum (Baudrillard, 1994) that owes its 'aura' to being photographed by multitudes of tourists for whom it receives meaning from the very numbers of reproductions taken. It is in presentation of the 'ideal' image, the

mass photographing of which creates the simulacrum (Allen & Handley, 2018). As they tautologise, ‘The implication is that it is simply photographed because it is famous; and famous *because* it is so frequently photographed’. This connects strikingly with the ‘frictional’ practices of ‘celebrification’ that characterise ‘the economy of attention’ in contemporary life, as discussed earlier.

The (territorial) nature of innovation

Let us now turn our attention to a more concrete discussion on innovation and tourism, seeking to define an analytical framework in which tourism and innovation can contribute positively to building a more capable and sustainable society. The way innovation is considered today, as an uncertain, collective, systemic, localized process, supported by interaction dynamics, cumulative (path dependent) and with a strong territorial dimension, started with Schumpeter (1942): technological and institutional change through ‘creative destruction’ is pinpointed as at the heart of capitalism. Today, Neo- Schumpeterian innovation literature has advanced through multiple bifurcations and is, at this moment, wide and diversified (Nunes, 2012). Unaccountably though, ‘creative destruction’, which with a moment’s reflection has its apotheosis in contemporary global tourism, is seldom analysed as such. Yet it is a mere platitude to observe that the process of creating ‘territorial’ authenticity for tourists is complicit with the destruction of the ‘cultic image’ of authenticity that resides in the vacuum at the heart of markets (Galbraith, 1958). Accordingly, the territory is a result of complex interdependencies among; the size of the market (not its vacuous heart), the dynamics of interactions and a political-institutional framework favourable to economic and social achievements (Nunes and Sousa, 2020).

According to Camagni (1995: 319), the main components of innovative means include:

Smithian processes of division of labor between production units; Arrow learning-by-doing and by-using processes (...); Marshall or Allyn Young externalities (...); Schumpeterian entrepreneurship (...); and Chris Freeman's cross-fertilization processes, generating incremental and integrated innovation systems.

After these works, other approaches have been highlighting the role of territorial contexts in the innovation process (Nunes, 2012). In summary, the territorial dimension of innovation leads us to the relevance of collective learning, relational and institutional proximity, informal relations and territorial networks. For our purposes, table 1 shows the relationship between the role of territory and the mechanisms associated with its integration in the innovation process. This table will also serve to establish the relationship with tourism, developed in the next section.

[insert table 1]

The concept of tourism revisited: tourism as a territorial singularity fuelled by territorial innovation (ST.i)

Nunes and Sousa (2020: 30-36) argued that tourism should be circumscribed conceptually, analytically and politically through the concept of *territorial singularity*. The starting point of this approach is the realization that tourism is a sector of the economy. However, like any other sector of the economy and its related activities, it has specificities that objectively condition interventions in its domain, be it public policy, business policy or innovation modes (Hjalager, 2010; Nordin & Hjalager, 2017). What is the main specificity of tourism, as an economic activity? It has been argued that its main specificity has been an absence of innovation, except for adaptation of organizational processes like on-line booking systems, or remoter hiking (trekking) from elsewhere (Halkier, 2010). The main consequence is that tourism can configure a territorial singularity as a ‘tourism region’, that is, it can configure a manifestation of economic ubiquity (production and consumption and consequent value creation) in the same territory, based on a coherent, shared and desired integration of ‘*perfect resources*’ with ‘*territorial coherence*’ (Nunes & Sousa, 2020: 31-5). Territorial singularities can be understood as the territorial (dynamic and evolutionary) counterpart of the concept of personal embeddedness (Polanyi, 1944) and internal to the organization (Granovetter, 1984) of tourism while absorbing Schumpeter’s idea of innovation as ‘new combinations’ or Chris Freeman’s ‘cross-fertilization’ innovation processes. Accordingly, the territorial singularity becomes the territorial innovation. As post-auratic innovation it will by definition lack ‘authenticity’ by being reproducible, but only in respect of its adherence to sustainability principles. Our proposal is that the territorial dynamics that contribute to the construction of the territorial singularity should mostly be developed within the scope of the territorial dimension of innovation. The territorial dimension of innovation is embodied in terms of the territorial mechanisms of innovation that, associated with the three dimensions of territory formulated earlier must allow the construction of the territorial singularity (see table 2).

[Insert Table 2]

The conceptualization of tourism as ST.i has three very concrete and operational advantages. Firstly, it allows for clearly identifying resources, processes, actors and intervention mechanisms to achieve minimum thresholds for endogenous territorial competitiveness based on tourism. Secondly, ST.i is an intrinsically dynamic concept, constantly evolving and its construction cannot be dissociated from the territorial innovation processes that underlie the interdependence of its main components. Finally, this concept is not, by definition, an imminently economic or disciplinary concept. On the contrary, it is a concept that starts with economic activities, but integrates other disciplines in a specific territory that should contribute so that tourism can play a relevant role in the competitiveness and cohesion of a territory. This can be a first step towards defining innovation

in tourism as its own research field, with a sufficiently clear and objective object of study and intervention.

3. Possible futures and the future impossibility of the recent past

A new approach to innovation for the future of the planet

First, as a taster, we consult some statistics that indicate the scale and nature of the problem by asking, first, how many tourists travel within and beyond their countries of origin annually; and, second, what human activities do they typically undertake while on vacation? The first question asks about total tourism while the second is interested only in vacation tourism. This is not to say business tourism is unimportant: to the contrary it is an enormous cost, quantity and planetary depredator as we show later. Accordingly, the answer to the first question is as follows. The United Nations World Tourism Organisation (UNWTO, 2020a) January estimate was that internationally there were just 25 million tourist arrivals in 1950, 68 years later (2018) this number had increased to 1.4 billion international arrivals per year. This is a 56-fold increase. In 2019 it was 1.5 billion but expected not to repeat its regular 6% growth rate even before taking the Covid-19 pandemic into account. But the first quarter 2020 results showed global tourism had actually declined by 22% and would more than likely decline by 60% - 80% annually compared to 2019's 1.5 billion. Bizarrely – from the viewpoint of this contribution's perspective – UNWTO (2020b) declared the following in May: 'These places millions of livelihoods at risk and threatens to roll back progress made in advancing the Sustainable Development Goals (SDGs).' The first part of that judgement is true, but most observers would seriously question the second.

So, second what are the most popular pursuits undertaken by global tourists? The guilty secret of tourism is that one of the most popular tourist activities when they are on vacation is 'going shopping'. While moderately passive tourism acts like 'Sightseeing,' 'Walking' and 'Eating' are more popular, shopping at fourth (63% of survey respondents in World First's survey in 2017) is a major tourist activity. It is more popular than: Sunbathing (52%); Reading (51%); Beach (50%); Swimming (48%); Historic Attractions (40%) and Museums (32%). Barcelona, as one of the most visited cities of the globe, has millions of tourist shoppers per year and suffers 'tourist fatigue' accordingly. Even Florence, another cultural destination, found to its surprise that its only two peripheral 'designer outlets' at Barberino and Regello, and city design museums of Florentine natives Gucci and Ferragamo, accounted for 6 million shopper visits, only 4 million fewer than visited its art galleries, churches and other attractions. Florence shopping tourists came predominantly from China, Russia and South Korea (Willan, 2017).

Two more forms of tourism are important to mention, as noted, each contributing prodigiously to climate change activity. In the first case, business tourism 'events' contribute audiences of up to many thousands at the peak, while sports tourism dwarfs the numbers of spectators contributing audiences of many tens of thousands, up to 100,000 at the peak. All of these 'events' generate tremendous

demand for tourist transportation, subsistence and accommodation on a global scale. The first is business tourism and the second not insignificant form concerns sports tourism. According to Littlefield (2016) there were 1.9 million global business conferences involving ten or more persons for a minimum of four hours in a contracted venue worldwide in 2016. There were 251,236,000 global business meeting participants in 2016. The estimate of the annual cost of such events is \$1.1 trillion. The industry employs some 25 million direct and indirect employees (Oxford Economics, 2018). At a glance these show enormous and questionably necessary intangible aspects of the forms of global capitalism whose equally questionable and wasteful ‘innovations’ especially regarding travel and accommodation consumption support the assumption that so-called ‘innovation’ is global capitalism’s ‘religion’ or essential vitamin, otherwise ‘greed’. Thus, food and travel are the ‘dark’ twins contributing to the coronavirus outbreak. As is noted below some of the earliest diagnoses of coronavirus occurred at the World Military Games, which were held there from October 18-27. Competitive sports are one of the main contributory forms of essentially unnecessary forms of travel that have accompanied the marketised logic of status or ‘brand’ ranking among social, military, and medicalised *inter alia* associations that have come to prominence among civil society interest groups. In 2016-7 505 million spectators ‘consumed’ international sports events (GSI Report, 2017). According to *Wikipedia*, the totals for worldwide *sports* tournaments in 2019 include: 77 for men; 67 for women; 17 open; and 20 mixed – a total of 181.

The ‘Gigafactory’ Template for Sustainable Global Tourism

So, now we know the nature of the spatial planning requirement to create an innovative new system and structure to transition global tourism at 1.5 billion visits away from unsustainable pollution, disease and climate change towards a new cleaner, renewable a sustainable future. The key is, putting it simply, to think big. A model already outlined for the reconfiguration of production geography (EV; electric vehicle, batteries and solar storage systems) provides a template for adaptation from global production to global consumption crafted to promote the optimal mix of sustainable global touristic infrastructure and spatial planning superstructures. The model template is supplied by our ‘gigafactory’ and ‘sustainable capitalism’ analyses (Cooke, 2020a; 2020b). We begin with the – now fully realised - gigafactory exemplar. Through his Tesla EV car, truck, solar tile and panel, and lithium ion battery (LIB) platform, Elon Musk has innovated an integrated, transversal innovation platform architecture that has been combined with planned urban living quarters for forty thousand employees in relatively short order construction time. Starting with his first assembly ‘megafactory’ in Tilburg, The Netherlands, the deep structure of currently advanced sustainable spatial planning can be discerned. Built in 2013, it is intentionally located next to advantageous infrastructure on industrial land. This includes alignment with the Wilhelmina canal linking intermodal container barges with the Port of Rotterdam and high quality and availability of transportation infrastructure. An excellent rail and motorway network connects Tilburg to all major electrical vehicle (EV) markets in Europe, meaning parts and

EVs can be distributed to anywhere across the continent within 12 hours. The megafactory has a rooftop solar panel power station that supplies all the megafactory's energy needs. It is the template for the first Tesla Gigafactory at Reno, Nevada (US), which at 15 million square feet is the biggest in the world at three times the size of New York's Central Park. It is part of the Union Pacific Railroad that links other suppliers in Michigan and California to the Tesla assembly plant in Fremont. This has adaptively re-purposed the old GM-Toyota NUMMI plant for EV assembly. At Warm Springs, a suburb of Fremont, on old UPR railyards a new 'innovation district' featuring a 'Tesla campus' with an advanced manufacturing plant, an 'innovation cultivator' for technology start-ups in cleantech, life sciences and advanced manufacturing, has been built on 850 acres, centrepiece of a new Bay Area Rapid Transit (BART) interchange.

It is worth noting that cross-border gigafactory logistics integration centred on EV batteries is also the focus of the *Freyr* company's project in Norway. This aims to build a Gigafactory (1)-inspired vertically integrated plant to start in 2021 with 2500-3000 jobs. It is connected to the *Northvolt* project in remote north Sweden (Skellefteå) to promote batteries and electromobility. The Norwegian *Freyr* renewable energy storage firm will build a 32 GwH Gigafactory as the first component of a potential 'Nordic Battery Belt' connecting Mo-i-Rana (Norway) – Skellefteå (Sweden) – to Vaasa in Finland (Ostrobothnia region's 'Lithium Province') for proximity to green energy, on the one hand, and LIB cathodes for future German EV automotive assembly, on the other. The *Freyr* Gigafactory is wholly powered by geo-thermal energy and a 600MW on-shore wind park. In Sweden *Northvolt* (1) has approval for building a 32 GwH Gigafactory at Skellefteå with VW and BMW as key investors and plans to build *Northvolt* (2) in a joint venture with VW at Salzgitter, near Wolfsburg in Lower Saxony, Germany in 2021 (Nordberg, 2020). Finland's Rovaniemi theme-park on the Arctic Circle would benefit from thousands of high-paying jobs to boost its international tourism offer if augmented with Eden project-like geodesic 'biomes'.

Accordingly, transforming the production template into a suitable global tourism destination suggests thinking at comparable scale given 1.5 billion tourists require amenities, subsistence and accommodation among suitably large-scale facilities. Obviously, the passive 'Walking' 'Sightseeing' and 'Eating' activities are taken for granted, meaning 'Shopping' the fourth most popular activity must be catered for. This may combine browsing (including virtual reality; VR), actual (fumigated) fitting, and *prêt a porter* as well as *click-and-collect* purchasing, with in-store recycling an option. Sunbathing, Reading, Swimming and Beach-Lounging can be catered for by internal or external wave-machine bathing facilities. The 'epic' Tokyo 'Ocean Dome' wave pool was, until closed for financial reasons by owner Sheraton Hotels, capable of accommodating 6,000 swimmers and surfers. The world's biggest lagoon-wavepool is in Tenerife, Canary Islands, Spain, at three metres (9.8 feet). We then have Historic Attractions and Museums to cater for. This calls into play augmented reality, gamification and immersive theatre, cinema, music and literature. There is an established history of cultural websites since Microsoft's *Encarta*, which lethally disrupted the established monopoly of *Encyclopaedia Britannica*. Nowadays, recombination by crossover

innovation has helped enable music and gaming *aficionados* to endure Covid-19 lockdowns by means of the following three ‘event’ types. First, ‘virtual concerts’ exist but currently the prodigious speed of data and technology to facilitate them and limited appeal to artists or audiences have hampered them. But in a post-Covid-19 videoscape, change is observable: thus Travis Scott (American vocalist) engaged with and appeared in the new market by performing a concert on the popular video game *Fortnite*, while *Massive Attack* (UK pop group) performed in the even more popular Lego videogame *Minecraft*. Ten years after Sweden’s ‘Fiber Optic Valley’ (Hudiksvall) pioneers mounted a VR theatre drama in ‘virtual’ geographic space, New York’s Metropolitan Opera House in May hosted a ‘virtual gala’ streamed together from performers’ Zoom terminals (VINNOVA, 2011; Fisher, 2020). Shortly after these ‘events’ consumer electronics giant *Sony* began recruiting a dedicated team to build large-scale virtual concerts. Second, Immersive Theatre and cinema, accompanied by immersive novel scripting exist to bring audience participation to a new pitch through participating in the performances. Originated in Wales (UK) in 1981 by experimental theatre group *Brith Gof*, the tradition is followed up by *Secret Cinema* a company that combines film, theatre, music and art to create performative audience-engaging experiences. These have included the films; *Back to the Future*, *Alien* and *Moulin Rouge*.

Our questioning of ‘auratic’ tourism is made flesh by the recalling of a Victorian Keeper of Fine Art at London’s V&A museum who disapproved displaying original works of art in preference of showing only reproductions. This would deactivate spectator fascination with the price rather than the aesthetic appreciation of the work. A successor director and another, former director, of the British Museum, agreed that recent innovations in reproduction techniques recreated the artists’ intentions better than the faded, varnished and otherwise deteriorated original masterpieces. Other academicians noted that ‘aura’ is lost nowadays due to restrictive viewing conditions behind thick security glass or high-up hanging, while modern scanning showed truer, unfaded colours (Sanderson, 2020). The implication of this change of attitude is that whole galleries of approved copyrighted reproductions could themselves be reproduced and recombined for the 32% of tourists appreciative of museums housed in such post-auratic platforms of affordable, future tourism activity.

Finally, on planning lines implemented by Tesla, sustainable ‘global’ tourism facilities on a mammoth scale combining all these tourism (and other) activities can be envisaged occupying giga-buildings and their giga-curtilages at the centre of sustainably planned support neighbourhoods designed on lines capable of providing variety and interest for the large numbers of employees that will people the service functions (hotels, clinics, deliveries) that still cannot be satisfactorily be met by AI-driven robots and systems. Accordingly, having described the recombined, crossover innovation platform for post global tourism of a sustainable kind and to show that it exists putatively but has yet to be realised, we turn for a term and concept that captures what is being proposed. For initial inspiration we refer to New York’s *The Shed* at Hudson Yards. This is a new cultural centre rather than a tourist complex which commissions, produces, and

presents a wide range of activities in performing arts, visual arts, and pop culture. Built, like Warm Springs, over rezoned railyard land, The Shed is a 170,000 sq. ft. (16,000 m. sq.) complex built on a 26-acre industrial site. Combining the concept of 'Giga' and 'Shed' gives us *GigaSheds* as descriptors for the large-scale seeding of post-global tourism, post-auratic, yet 'photographable' icons of future mass leisure consumption. Unlike the New York exemplar it would be apposite to site such very large installations on remoter modal interchanges for EV tram or trunk railway lines running on battery or mains electric renewable energy, serviced by EV aeronautics, where feasible, EV taxis or rental guided cars with amenities serviced by Tesla-type semi-trucks (articulated trucks). These are now produced at Tesla's Gigafactory (1) extension at Reno.

Innovation in Tourism in Portugal in the last decade: excesses of an innovation model of the type institutional push-serendipity pull

Portugal has recently advanced its reputation as an international tourism destination. Important in this is an innovation model that we can call *institutional push-serendipity pull*. The political-institutional dimension at the national level played the factor that triggered all further exploration of this new level of external (and later also internal) demand. This increase in demand, in turn, has enabled many investments to be made viable and the effective exploitation of this new level of demand, at least until this cycle has changed. But these two phases must not be confused; without institutional innovation, business innovation would, as always, have been residual in attracting new demand. This means that we are facing two very different dynamics: an institutional impulse that generates new demand and a dynamic of supply that allows us to exploit this new demand effectively. The driving force behind tourism innovation in Portugal at its most dynamic time was the political-institutional factor (Figure 1) and this fact is not irrelevant to the Portuguese economic and social position in the post-COVID19.

[insert figure 1]

The current crisis has also clarified many aspects of our common life and made clear much of the irrationality (economic, social and environmental) of Portuguese economic policy choices. Tourism is a sector that has only recently gained substantial weight in national and global accounts. The technical, social and economic changes (democracy, security, income, transport and communications) that make their generalization and financial relevance possible, were only available in the second half of the 20th century.

We seek now briefly to switch context attention towards the current global medical emergency caused by the coronavirus and its consequent Covid19 disease. At this writing (4.6.2020) Covid-19 has killed 384,642 persons globally.

The precise origin of this lethal virus is unknown, but the predominant view is that it originated like many other similar viruses in China. Specifically, most experts locate its origin in the city of Wuhan but some place it closer to Shenzhen or Guangzhou. The first officially identified case in Wuhan dates from November 17. However, Sage (2020b) reported that French athletes caught it in Wuhan when they were competing in the World Military Games, which were held there from October 18-27. So what the French athletes caught was an already circulating coronavirus in October 2019 in Wuhan earlier than its official detection date. Thus Wuhan was China's first BSL4 lab, it lost the 50 contracted technical experts, experienced in potentially fatal pathogen research, but *Technip*, the French firm contracted to certify the lab's BSL4 status, refused to do so. Oddly, the Wuhan Lab director's media assertion that a leak of the pathogen was 'impossible' invited further scrutiny (Sage, 2020a). China's National Health Commission later denied a leak from the Wuhan Institute of Virology (WIV) but announced further tightening of safety requirements, training on data security and stricter accountability on bio-security management. A WIV virologist, Shi Zhengli, nicknamed 'Bat Woman', confirmed to *Scientific American* (Qiu, 2020) that the SARS-CoV-2 genome analysed by polymerase chain reaction originated in a horseshoe bat cave in Kunming, Yunnan province, a thousand miles from Wuhan, where Shi had discovered it.

As a coda to this disquisition on the relationships among climate change, biodiversity and globalisation we quote Italian observer Paolo Giordano, who adheres to the theory that SARS-CoV-2 originated in the 'wet market' in Wuhan, where live animals were sold until it was closed by the Chinese authorities. Eco-disasters, like wild bush fires or rainforest felling create 'ecosystem refugees' among viruses losing their hosts from such mass-extinction events; namely, animals, birds and insects. So the microbes seek new hosts among increasingly proximate candidates – human beings. A further example concerns deforestation which also reduces the abundance of fruit. Fruit bats host the ebola virus which may transfer to gorillas also in search of a diminished supply of forest fruit. Gorillas pass ebola to humans (including through consumption of 'bush meat'). Climate change stimulates other diseases such as malaria, dengue fever, cholera, Lyme disease and West Nile virus. Travel and food, once again, invoke the necessity severely to control our mobility consumption as it affects the complex chains of geographical interaction human agents exert on the world. Giordano also noted how Italian media processed information by means of 'fake news', manipulating infection data by lowering or inflating total cases, deaths or testing claims, as happened daily in the UK and probably elsewhere. Accordingly, 'truth' is distorted in relation to errors and hyperbole invoked to cover up or celebrate dysfunctional relationships and policies towards the environment and disease (Giordano, 2020; Odell, 2020).

Some multicolored experiences: from Bukubaki to Bluestone

Sustainable tourism is defined by the UN World Tourism Organization (UNWTO) as “refer[ring] to the environmental, economic and socio-cultural aspects of tourism development. A suitable balance must be established between these three dimensions to guarantee its long-term sustainability.” Thus, it includes making sure that communities are being paid fairly and would include urban destinations where one might not automatically think of the need for environmental sustainability.

Portugal is no exception on this. Recently there are lots of references that make possible to book a room following ecological principles that also contribute to reduce the impact of tourism in the chosen destination. There are some eco resorts build with sustainable and recycled materials, conserve more water and have energy efficient lighting. Choosing these accommodations, instead of traditional hotels, reduces ecological footprint and is an opportunity to connect with nature as well as to enjoy activities that cannot be done anywhere else. Here are some examples.

Cocoon Eco Design Lodges in Comporta, combines the possibility of beach vacation without giving up the countryside. There are no concrete, only sustainable huts supported by piles and unpaved road even to access the place. It has a biological pool, a tree house, a Moroccan tent, a vegetable garden and a wild forest with no end in sight. The eco design lodges, have large windows to the outside and private decks, making possible to enjoy nature.

Cerdeira - Home for Creativity is located near Lousã. It is integrated into the Schist Villages network and where 30 years ago there was no water or light. Not a single inhabitant lives there now; the only two streets in this village are practically all occupied by the nine schist houses intended for accommodation. Outside, they remain untouched, with stone facades. In the interior, despite the modern decoration, they preserve the original stone, clay and pine floors.

At Casa Vale da Lama, in Lagos, there is no Wi-Fi in the rooms or TVs. The floor-to-ceiling glass doors are the only available canvas, overlooking the gardens, where flowers might be picked. One can also take advantage of the hammocks available on all terraces, with direct access to the outdoor pool. In the kitchen, the farm's products - along with other ingredients, which are locally produced, seasonal and organic as much as possible – are turned into Mediterranean buffets.

At Pedras Salgadas, located in Vila Pouca de Aguiar, there are three houses, as in the movies, surrounded by nature and fresh air. This ecological hotel project has also eco houses, located in the heart of the park, among centenary trees and vegetation full of colours. It is also a must to go through the various hot springs in the park (which contain water with proven benefits for the body) and eight kilometres of paths.

Bukubaki in Ferrel, combines the passion for the lifestyle associated with surfing with ecological glamping, promoting awareness of nature. The wooden houses are equipped with ECO heating; the Canadian tents are made of waterproofed cotton, protected by an extra cover and erected on a wooden deck. To eat, Juncal n.6 combines the best of the flavours of the sea and local organic agriculture. There is also a salt-water pool, heated by solar panels, and the activity area, with an outdoor deck for yoga, Pilates, therapeutic stretching exercises and surf balance.

Tourist accommodation could combine exemplars like Martinhal in the Western Algarve, Portugal, a largely sustainable hotel-resort in a formerly damaged (historic piracy by Francis Drake and successive earthquakes in Sagres) reconversion area. The hotel uses mainly solar energy, has a strict sustainable food philosophy using local ingredients, and has kept many of the local wooded areas intact but local timber, cane, stone and cork used in construction. Martinhal has created 250 direct jobs (95% of the staff are local) and another 250 indirect jobs to suppliers, local shops and bars. As a complementary alternative to this eco-resort in Algarve, Bluestone, in Preseli (Pembrokeshire), Wales is sustainably built, fuelled and provisioned by fifty farms with locally sourced organic food, a fuel network of local growers of fuel (willow) and construction timber but currently lacking only sufficiently sustainable transportation infrastructure. Bluestone's tourist development includes some 340 timber chalets surrounding a 'Celtic Village' of 80 permanent buildings within the coastal National Park. Outside the park, it is integrated with an existing leisure centre extending it with the inclusion of a Snow Dome, Waterworld and sports centre. The development was valued when opened in 2008 at some £60 million. Preseli district is the unique home to the 'bluestones' that comprise the celebrated Neolithic monument and World Heritage Site of Stonehenge. The Bluestone philosophy 'is care and enhancement of the environment'. Committed to sustainability the company attained the highest environmental accreditation in Europe, ISO 14001, and Level 5 of Wales' Green Dragon Environmental Scheme. Connectivity, crossover innovation and integration of much bigger 'GigaSheds' characterise the biggest tourism innovation platform yet imagined. The cost will – under capitalism – no doubt attracts public subsidies and corporate sponsorship of the kind that *The Shed* attracted (e.g. Allianz, Mitsui, Wells Fargo and Deutsche Bank, *inter alia*). Furthermore, the global Insurance market is also expected to be hit by claims amounting to \$200 billion (\$4.3 bn. for Lloyds of London alone) over the Covid-19 pandemic; meanwhile negative interest is being charged globally on loans and mortgages, which have never been cheaper (Martin, 2020).

Conclusions

The new role that innovation should play soon was discussed, politically and financially oriented towards objectives other than those that have guided it in recent decades. They will be different goals because we are going to live in a different world. Tourism has been reconceptualized, creating a more cohesive and eventually competitive escape from 'carbon lock-in' (Unruh, 2000) because it is also territorially differentiated. Finally, a new concept was presented – ST.i

– which seeks to contribute to the coherent and consistent integration of tourism with its transformative dynamic, namely innovation. Choices will have to be made. It is not possible to build ST.i in all territories, with any kind of resources and political choices. We need diversity, ST.i and responsible choices. The world needs better innovation, better tourism and more lucid and courageous policy options.

The ST.i approach developed in this text aims to constitute itself as the territorial counterpart, possible and shared, in a time of post-auratic tourism. The ST.i conception integrates mechanisms that seek to contribute to manage dilemmas between resources and processes territorially circumscribed in a world in profound changes, where economic criteria must give some space to other dimensions of sustainability. The construction of an ST.i in the field of tourism necessarily causes frictions to emerge that must be overcome, whether it is a resource that cannot be exploited in that territory, or a territory that does not have political-institutional capacities and attributes to confer territorial coherence itself. The auratic dimension of tourism in the future must be built through the concept of ST.i.

Partnership between governance mechanisms, communities and engaged business corporations are the vehicle for post-auratic global tourism of the kind we have described. Giga-Shed is designed to re-track global tourism on a new, more sustainable, diverse and differentiated path. It does not aim to ‘shut down’ but gradually moderate the destruction of currently perceived as ‘authentic’ tourist sites and attractions that have become increasingly de-natured. It promotes the implementation of new, more sustainable forms of ‘crossover’ innovation in a field that has for long been shown to be sadly lacking that quality. For older ‘woke’ tourism consumers, Giga-Sheds can provide a large-scale but accessible mix of vacation experiences designed for de-carbonised enjoyment. For younger generations, there is a set of global dynamics that seem inevitable. The most environmentally attentive see them mainly in the sense of uncontrollable forces while for the least attentive they may simply seem to be available as if acquired by natural, almost divine right. There is something new for both. All dynamics were the result of political choices (see, for example, Chang, 2013, on globalization). Its primary causes, the intervening actors and the space-time fabric where they occurred can be identified. The resulting catastrophe in which we live has clarified this evidence for us: we have choices, but choices have consequences. Involuntarily, but not on purpose, COVID19 put the world on an effective path to combat climate change, a way that no politician has ever had the courage to make publicly explicit. We also know that we do not want a world without gravity like the current one, but we must learn how to build a new ‘gravity’ where the excesses of the past will be eroded and cannot any longer take place.

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Appendix

Table 1 – Territorial innovation mechanisms and territory dimensions

<i>Territorial innovation mechanisms</i>	<i>Territory dimensions</i>
Institutional proximity to governance Regulatory context, standards, social conventions Incentives and signs	Institutional
Informal knowledge exchange Networks and explicit collaborations Labour mobility Marshallian Externalities Local business networks Firms interdependence - value chain Co-location of highly specialized firms	Relational and functional
Co-location of specialized firms Co-location and technological proximity Location	Geographic

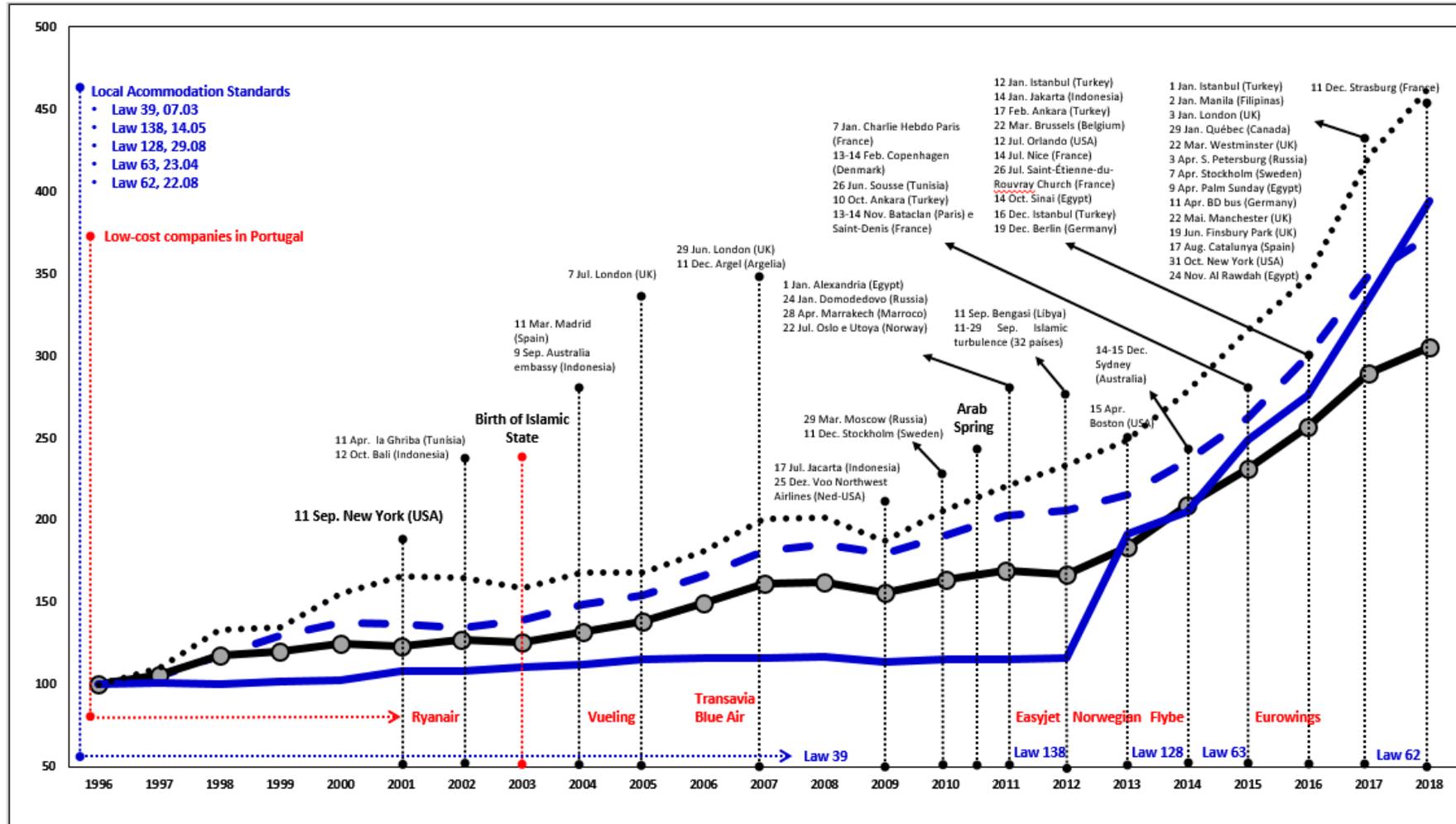
Source: Own elaboration based on Nunes (2012); Nunes (2015) and Swann (2009: 149)

Table 2 – Tourism as a ST.i

<i>Territorial innovation mechanisms</i>	<i>Territory dimensions</i>	<i>Territorial innovation model – Tourism as a ST.i</i>
Institutional proximity to governance Regulatory context, standards, social conventions Incentives & signs	Institutional	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"><i>Governance Shared Model</i></div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"><i>Territorial Coherence</i></div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"><i>Perfect resources</i></div> </div>
Informal knowledge exchange Networks and explicit collaborations Labour mobility Marshallian Externalities Local business networks Firms interdependence - value chain Co-location of highly specialized firms	Relational and functional	
Co-location of specialized firms Co-location and technological proximity Location	Geographic	

Source: Own elaboration based on Nunes (2012); Nunes (2015); Nunes and Sousa (2020) and Swann (2009: 149)

Figure 1 – Booms & Illusions (1996=100; Portugal)



Source: Own elaboration (March 2020)

Legend: dashed blue line: Air Traffic; black line: Guests; blue line – Accommodations; dot black line – Tourism Exports.

In the Graph: terrorists attacks since September 11; RED: Low cost airlines in Portugal & BLUE: Local Accommodation Standards.



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