Mountains in a flat world: why proximity still matters for the location of economic activity

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by

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Abstract

Thomas Friedman (2005) argues that the expansion of trade, the internationalization of firms, the galloping process of outsourcing, and the possibility of networking is creating a 'flat world': a level playing field where individuals are empowered and better off. This paper challenges this view of the world by arguing that not all territories have the same capacity to maximize the benefits and opportunities and minimize the risks linked to globalization. Numerous forces are coalescing in order to provoke the emergence of urban 'mountains' where wealth, economic activity, and innovative capacity agglomerate. The interactions of these forces in the close geographical proximity of large urban areas give shape to a much more complex geography of the world economy.

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1. Introduction

People's thoughts in a golf course are sometimes peculiar. While most of us would use the occasion to try, somewhat clumsily, to emulate Tiger Woods in the approach to the famous 12 hole at the Augusta National Golf Club, to bond with our bosses and business partners, or to simply enjoy a relaxing Sunday afternoon with our friends and family, Thomas L Friedman (2005) spent his time on the course in Bangalore (or Bengaluru, as it has officially been renamed since 2006) to ponder about the implications of having to aim his ball at either Microsoft or IBM (p. 3). And by managing to squeeze his ball right onto the flat Hindustani green, he reached the conclusion that the 'world is flat', i.e. "that the global competitive playing field is being levelled" (Friedman 2005: 8).

Friedman's personal eureka is, alas for him, in itself not particularly new. A string of researchers and commentators have been for now almost two decades arguing that the expansion of trade, the internationalization of firms, the galloping process of outsourcing, and the possibility to get networked at increasingly low prices herald the 'end of geography' (O'Brien 1992), the 'death of distance' (Cairncross 1997), or the emergence of a 'space of flows' (Castells 1998) or of a 'weightless economy' (Quah 1999). As Ohmae underlines, in a 'flat world' the real map of the world is no longer a political map, but a map of capital, financial, and industrial flows, where political "boundaries have largely disappeared" (Ohmae 1991: 28). Yet, despite not putting forward a completely new message, Friedman deserves credit on two counts. First, he manages to turn a well-established idea into the spinal chord of an entertaining and well-written book, contributing to popularise a concept that, while well-known in academic and policy-making circles, has been fuzzy and somewhat overlooked or manipulated by managers, trade unionists, civil servants, and the general public. Second, he takes the idea of the 'flat world' further than his predecessors by claiming that 'Globalization 3.0', as he calls it, does not only flatten the playing field and represent the end of geography as we know it, but also that the evening of the playing field empowers individuals (Friedman 2005: 11). "People all over the world started waking up and realizing that

they had more power than ever to go global *as individuals,* they needed more than ever to think of themselves as individuals competing against other individuals all over the planet" (Friedman 2005: 11).

However, Friedman's views of the flattening world and of the empowerment of individuals through 'Globalization 3.0' may simply be the result of him deciding to play golf with educated Indians and expatriates on perfectly manicured courses on the high but relatively flat plateau that surrounds Bangalore. Had he played cricket with barefoot children and with cardboard boxes as wickets in the North-West Frontier Province of Pakistan or, for that sake, dominoes with middle-aged blue collar workers in a bar in the Italian Piedmont or *boules* or *petanque* with their French equivalent in Grenoble, his vision of the impact of globalization could have been very different. There, the sight of the Hindu Kush or of the Alps would have made him realise that, although this globalization wave does indeed represent a tectonic shift of perhaps unprecedented scale, it does not necessarily imply the erosion of previous mountains into a flat and uniform world. In contrast – as with any crash of tectonic plates – it seems to signal the emergence of mountains ranges of similar height, if not higher, than previously existing ones, although not necessarily in the same place. Globalization implies changes, opportunities, and threats and not all territories across the world have the same capacity and tools to make the world and even playing field. We would therefore argue that Friedman's flat world is indeed full of mountains and that some of these mountains are as high as the Everest.

And by mingling with children and their parents in not-so-remote areas of the Asian subcontinent or factory workers from Novara or Grenoble, rather than with the chairman of Infosys, with graduates from the elite Indian Institute of Technology or the Indian Institute of Management, or with foreign expats and interns at Infosys and other similar firms, he would have realised that the large majority of the population of the world, far from being empowered to climb and conquer these mountains, is

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ill-prepared to face the challenges that the tectonic shift known as 'Globalization 3.0' offers. In fact, we will argue that when Friedman says that 'Globalization 3.0' empowers individuals, he really means it empowers large firms, regardless of whether they are North American, European, Indian, or Chinese large firms.

In this essay we will challenge Friedman's (2005) account of the impact of globalization across the world on these two counts. After a brief presentation of Friedman's main arguments in section two of the paper, in the third section we will look at the evidence of economic concentration and agglomeration that make the world much more mountainous than what Friedman would like to believe. Section four then dwells on the forces that are shaping the emergence of mountains in Friedman's 'flat world'. The main conclusions are presented in section five.

2. The flat world

Friedman (2005) puts together an engaging and appealing story about globalization and its impact. The first section of his book aims at identifying the causes of the process of globalisation (the 'ten flatterners'). He describes how these processes have evolved in recent years, levelling the competitive playing field in favour of initially more disadvantaged countries and individuals (the 'triple convergence' process). The evidence to support his thesis is based on extracts from interviews and discussion with relevant people in different parts of the world and references to numerous cases. This amiable validation of the 'flat world' thesis allows Friedman to proceed almost seamlessly to the implications of globalization for the existing world political and socio-economic order, placing special emphasis on the US competitive position and internal welfare. This 'brief history of the twenty-first century' is completed by the analysis of the potential obstacles

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(from absolute poverty and deprivations to international terrorism) preventing the flat world from delivering its expected benefits to all.

In order to gain a better understanding of Friedman's 'flat world' thesis let us briefly assess his conceptualisation of the process of globalization. Friedman puts together 'ten forces that flattened the word' aseptic enough to make them attractive to virtually every one. Flattener #1 is the Fall of the Berlin Wall in 1989, which allowed more connections across different societies, reinforcing globalization's capacity to enhance all types of freedom: the freedom of movement of goods, capital, services, and individuals; the freedom to adopt best practices and common standards (p. 54) – whatever this means – regardless of where you are based; and the freedom for creativity to flow. By engaging in greater exchange not only individuals and territories become more innovative or creative, they also achieve a significant leap with the adoption of best practices. Flatteners #2 (Netscape), #3 (Workflow software), and #4 (Uploading material) refer to the capacity of new technology to bring about greater interaction through enhanced connectivity and the creation of what Friedman calls a 'global supply chain of software', which allows the combination of different platforms, such as PC and e-mail, as well as the increasing generation of community developed software (p. 94). However, globalization is also about outsourcing (Flattener #5) – "taking some specific, but limited, function that your company was doing in-house […] and having another company perform that exact same function for you" (p. 137) –, offshoring (#6) – recreating a company in a different place (p. 137) –, supply-chaining (#7), and insourcing (#8) – something akin to synchronizing global supply chains [what apparently UPS now does (p. 168)]. Taken together, the process allows for better 'in-forming' (#9) or the "ability to build and deploy your own personal supply chains" (p. 179). And all this is done at lightening speed by the use of what Friedman calls 'steroids' (Flattener #10), which allow engines to talk to computers, people to talk to people, computers to computers, and people to computers "farther, faster, more cheaply, and more easily than ever before" (p. 200).

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The ten flatteners are the basic ingredients of the process of 'triple-convergence' evening out the world. Convergence I implies that the powerful flatteners which co-existed independently of each other for a number of years, started to converge in 2003, emphasizing their self reinforcing nature and their intrinsic complementary. Convergence II or 'horizontalization' means that the interaction of the ten flatteners has brought about a radical revision of the predominant business model, forcing the conversion of pre-existing vertical relationships (within and between firms) into horizontal forms of cooperation. Finally, convergence III or 'new actors entering the scene' represents the enlargement of the world's boundaries, as a corollary of the horizontalization of power and economic relations. Progressively more countries and territories – from China and India to Russia, Eastern Europe, and Latin America – are becoming able to play a prominent role in the global market place.

The net result of this transformation is simply a better world. A world where individuals are empowered and better off. As Friedman underlines, "more people in more places, now have the power to access the flat world platform" (p. 206), even if this only means the opportunity to challenge someone giving a conference by accessing more accurate information in real time (p. 189) or to pay "South West Airlines to be their employee" (p. 202). But empowerment is only the tip of the iceberg. As a consequence of globalization, consumers benefit from cheaper and more efficient goods, from cheaper and better quality access to their friends and family living abroad, or from the possibility of assimilating innovation "without having to emigrate" (p. 217). But, even if this process seems – from Friedman's perspective – a natural evolution of modern capitalism, there are still some obstacles that have been slowing the 'triple convergence' and its impact. Habits and institutions often act as sand grains in this powerful mechanism, requiring a "massive world wide change in habits" (p. 217). This 'great sorting out' calls into question the role of the nation state ["Can it be preserved in a flat world?" (p. 23)], world-level exploitation relationships ["Who is

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exploiting and who is exploited in this horizontally organised world?" (p. 241)], the role of multinational corporations (and their impact on nation states), and power relations within the firm (from control to collaboration and connection). In this framework, Friedman argues that the main force likely to remove these residual obstacles to a perfectly flat world is the dear old 'free trade' recipe. Free trade is the milestone of Friedman's argumentation: 'flat' is in fact synonymous with 'free trade' (p. 264). As a consequence, Friedman's discussion of the patterns of winners and losers in the flat world and the corresponding remedies brings to mind the vast literature on the economic effects of the free movement of capital, goods, and labour.

In particular Friedman's thesis (and his rhetoric) is reminiscent of the literature on the 'death of distance' (O'Brien 1992; Ohmae 1995; Castells 1996; Cairncross 1997). In this literature it is claimed that technological progress and innovation is rapidly reducing the importance of distance in the location of economic activity. The great achievement of globalization has been to lower the barriers that prevented the mobility of capital, goods, labour, and, increasingly, services. As location matters "while physical barriers exist, while travel takes time, and while cultural and other social differences persist" (O'Brien 1992: 2), the rapid erosion of the obstacles that prevented the exchange of information, knowledge, goods, and other production factors has meant an even faster convergence towards a 'spaceless' digital world and towards more homogenous and global cultural models (Castells 1996; Cairncross 1997). As in Friedman's thinking, the main engine behind the 'death of distance' notion is the 'communications revolution', technological progress and the emergence of advanced telecommunications and computing technologies allows for an enhanced mobility of economic factors, for an homogenisation of habits and activities, and for the removal of resource bottlenecks (Castells 1996). Technological progress, thus, detaches economic activity from its territorial and socio-economic context, permitting growth and development to occur virtually everywhere, even in areas where poor endowments had prevented development to take root (O'Brien 1992). Hence, thanks to computers and communication technology, economic activity can

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flourish now almost everywhere in the world, generating “something that will, in the main, benefit humanity: the global diffusion of knowledge. Information once available only to the few will be available to the many, instantly and (in terms of distribution costs) inexpensively” (Cairncross 1997: 4).

The concept of the nation-state both as a barrier, but also as an increasing irrelevance in this ‘world of flows’ is also present across previous ‘death of distance’ arguments. No one focuses more on this point than Kenichi Ohmae (1991 and 1995), who posits that economic actors have seized the opportunities afforded to them by this wave of globalization and have become extremely mobile, increasingly disregarding national or legal borders (Ohmae 1991 and 1995). More often than not, the hitherto almighty Westphalian nation-state is finding itself powerless to counter these trends. As economic activity and ownership become more and more international and global, economic actors become increasingly “divorced from national definitions" (O'Brien 1992: 100). As Friedman (2005) puts it “the more the flattening forces reduce friction and barriers, the sharper the challenge they will pose to the national-state and to the particular cultures, values, national identities, democratic traditions, and bonds of restraint that have historically provided some protection and cushioning for workers and communities” (p. 237-8). As a consequence, the powers of the state are reportedly being ‘hollowed out’ through the emergence of other actors, such as regions and international organizations, on the one hand, and multinational enterprises, on the other (Jessop 1995), limiting the state’s capacity to influence economic processes that take place on its territory.

The best thing of the flat world proposed by Friedman (2005) is that all its benefits come at very little cost. It is true that Americans and countries in the developing world would have to workout in the gym in order to get themselves into shape for the challenges the flat world brings about. But nothing too hard. The recipe for Americans is nothing they have not experienced before: more

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education, especially in science and engineering (p. 300), and better parenting through ‘tough love’, in order to make American children as driven as the brethren of immigrants in the US and their counterparts in China and India. With those ingredients, the US will be able to address the ambition gap with the emerging economies which is at the root of the current US problems to adapt to a globalized economy. For the developing world the recipe is not more daunting: more accessibility to the internet, more education, and better governance (p. 398).

Hence, taken to its limits, the flat world argument implies that "location no longer matters" (O'Brien 1992: 73), that activity can flourish virtually anywhere in the world at little cost, as advances in technology and telecommunications would have allowed a much greater mobility of information and knowledge, progressively eroding the traditional benefits of economies of scale, of scope, or of communication. From this perspective, thanks to advances in connectivity, in global supply chain software, and of outsourcing, insourcing, offshoring, and supply chaining, every territory, no matter how remote, has the potential to become a global player. Traders in the London stock exchange can move to the Seychelles and perform their work from there not only while sipping Pimm’s lying on their hammocks on an idyllic beach, but also saving thousands on rent as a result of not having to worry about having an office in the City. Probably this shift may allow them to be as productive because, despite possibly spending more time lying around, traders in the Seychelles will lose less time to commuting and congestion and will be happier, and happiness is associated with greater productivity (Layard 2005). Real time and low cost connectivity will make this possible. In a similar way, global production chains would generate millions of industrial and service jobs across the world, regardless of whether the workers are located in Bangalore, in Shanghai, in Djakarta, or in Sao Paulo. These jobs would not only raise the standard of living of those getting them – as they generally pay much higher salaries than local jobs – but also generate multiplier effects that will improve the quality of life of individuals all over the world at no cost for the developed world. As

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Friedman underlines in his India vs. Indiana story, if an Indiana company starts operating in India, using both its Indian employees and local hires from Indiana "the deal would greatly benefit the American arm of the Indian consultancy; it would benefit some Indiana tech workers; and it would save Indiana state residents precious tax dollars that could be deployed to hire more state workers somewhere else of build new schools that would permanently shrink its role of unemployed" (p. 241). Globalization hence does not entail winners and losers from a territorial perspective. It creates the conditions for a win-win situation: both the global North and the global South win.

3. Mountains in the flat world

Yet, unfortunately, the evidence that the world is being flattened out by the eroding forces of globalization and that this is empowering people across the globe is less forthcoming than Friedman would have wished. While it may be true that global conditions have improved and contributed to raise millions out of poverty, in relative terms the positive evidence is less forthcoming. For every Bangalore, Hyderabad, or Chandigarh, there are many other similar-sized cities in India – not to mention a whole swathe of rural areas – that are virtually untouched, if not negatively affected, by the whole globalization process. Bangalores are conspicuously absent from most eastern Indian states, including Assam, Bihar, Chhattisgarh, Jharkhand, Orissa, and even the largest state in India, Uttar Pradesh. Similarly in China, for every Shanghai, Guandong, Wenzhou, or Bohai rim, there are large territories in inland China that have been unable to shake their dependence on declining and often decrepit old communist heavy industries or on agriculture, to attract foreign direct investment, or to significantly raise the standard of living of its citizens. Bangalores are also noticeably absent from most of Africa, most of the Arab World – with the possible exception of Dubai – and most of Latin America. And for every Indian, Chinese, Brazilian, Malay, or Arab engineer playing golf in Bangalore, watching the Rugby World Cup Sevens in Hong Kong, or attending the Formula 1 Grand Prix in Sao Paulo, Kuala Lumpur, or Bahrein, there are thousands, if not millions, of

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individuals having to play cricket in improvised street pitches with cardboard wickets in India, Pakistan, or Bangladesh, or playing football barefoot in the streets of most African or many South American cities. Not all citizens of the world and, for that sake, all Indians, have what Friedman (2005) calls the "great advantage in having a pool of educated, low-wage English speakers with a strong service etiquette in their DNA and an enterprising spirit" (p. 221) or even "the tools or the skills or the infrastructure to participate in any meaningful or sustained way" (p. 470) in 'Globalization 3.0'.

In fact the evidence about the economic implications of globalization is rather mixed. Whether convergence at country level exists is much discussed. [1] Most analyses using countries across the world tend to find either divergence, or the emergence of a 'twin-peaked' evolution in the distribution of world income (Quah 1997; Jones 1997), that is the emergence of convergence clubs at high and low levels of income leading to increasing polarisation across the world. However, that is not always the case (e.g. Dollar and Kraay 2002) and, when population-weights are introduced in the equation, the picture changes radically and divergence or twin-peaked distributions disappear, leading to convergence (Schultz 1998; Sala-i-Martín 2006). Finally, when data for individuals are used the results indicate that inequality is very high, and that either there is uncertainty – mainly as a consequence of lack of adequate time series of data – about the direction of change (Milanovic 2005), or inequality has indeed increased (Dowrick and Ackmal 2001; Wade 2004).

At subnational level, the evidence tends to be less controversial. The general consensus is that, despite the fact that poverty levels have tended to decrease, within countries income inequalities have tended to grow, regardless of whether the analysis includes data for regions or individuals (UNDP 2001, 2003; Milanovic 2005). Regional disparities in India, for example, grew by more than 23 percent in the 1990s (Rodríguez-Pose and Gill 2006: 1209). In China, the increase was in

[1] See Milanovic (2005) for a useful discussion of the evolution of inequality in recent decades.

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excess of 20 percent, while in Mexico disparities rose by more than 11 percent in the same period (Rodríguez-Pose and Gill 2006).

Economic activity and wealth seem thus to be increasingly concentrated, if not in specific countries in the world in specific spaces within these countries. Large metropoli and urban agglomerations seem to be, by and large, the main beneficiaries of this trend. As Scott puts it, although it is true that the combination of technical progress and de-regulation have greatly enhanced the mobility of goods, labour, capital, and knowledge, this has neither implied the ubiquity of economic activity, nor undermined the need for urban concentration (Scott *et al.* 2001: 15). There is clear evidence across the world that large urban areas are attracting increasing shares of wealth, economic activity, and skilled workers. This is certainly the case in the developed world, where the protagonism of cities such as New York, London, Tokyo, or Paris at a global scale has been significantly enhanced (Sassen 2001; Taylor et al. 2001), or of Mumbai in India, Shanghai in China, Mexico City in Mexico, or Sao Paulo in Brazil. Economic command and control functions have been significantly increased in these so-called 'alpha' cities (Taylor and Hoyler 2000; Taylor and Walker 2001; Taylor et al. 2001).

But below this top level, many second-tier 'beta' and third-tier 'gamma' cities are also doing particularly well. In Europe, cities like Brussels, Amsterdam and the Randstad, Madrid, Copenhagen, Helsinki, Stockholm, or Rome have witnessed growth levels well above their national average. Cities such as Sydney, Singapore, Kuala Lumpur, Bangkok, Djakarta, Santiago de Chile, Cape Town, or even, within poorer countries, Accra or Maputo have also performed well. The concentration – rather than the more even territorial spread – of wealth and economic activity in these cities tells a very different story from that of the flat world. Other factors determining the creation of wealth are also increasingly agglomerated in and around large urban metropoli. This is, for example, the case of innovation and research spillovers which have become concentrated in

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large urban areas in recent decades. This is evident in Europe, where knowledge spillovers have been calculated not to exceed radius of around 200 kms from the largest and most dynamic cities (Moreno et al 2005; Crescenzi et al. 2007; Rodríguez-Pose and Crescenzi 2008), but more so in the US, where knowledge spillovers barely exceed the boundaries of metropolitan areas (Anselin et al. 1997; Varga 2000; Sonn and Storper 2008). These global, sub-global, and lower rank cities, which are becoming interrelated in an emerging 'world city network' (Taylor 2001) and where the functional links between cities are strengthened beyond physical contiguity (Castells 1996), are the mountains (or, if you want, the islands) in this flat world. In fact the world these days resembles much more what Veltz (1996, 2000) has called an 'archipelago economy', that is, a world where the connections between cities with relatively similar functions and powers in a world economy are greatly developed, regardless of distance, as they become increasingly detached from their regional and national contexts. As Castells (1996) indicates, in this 'space of flows' generated by globalization, large metropolitan areas become the nodes within the global network of financial and business firms. Hence, although advances in technology and deregulation may allow for economic activity to take place virtually everywhere, the reality is that this 'everywhere' is represented by a relatively limited number of places in different areas of the world, where global corporations locate engendering an ever greater urbanization of capital and decision-making structures (Sassen 1990; O'Brien 1992; Hall 1993; Castells 1998), a greater agglomeration of company headquarters (Bosman and de Schmidt 1993), and an even closer relationship between economic and political power (Rodríguez-Pose 1998: 81).

4. Mountain tectonics in a flat world

What are the reasons behind the fact that in a world where technical progress allows for the delocalisation of economic activity at relatively little cost, economic activity and wealth remain so stubbornly concentrated in large urban areas? Why is the economic importance and role of large

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metropoli across the world waxing rather than waning? What are the tectonic forces that explain the reinforcement of these mountains in a flat world?

The emergence of mountains in a flat world is related to the role played by proximity in determining the location of economic activity. As O'Brien (1992), Cairncross (1997), and Friedman (2005) posit, there is little doubt that, in theory, progress in telecommunications and in the capacity to store and diffuse massive amounts of information online has greatly reduced the role of physical proximity for the development of economic activity. However, physical or geographical proximity is only one dimension of proximity. Boschma (2005: 62) identifies four other dimensions: cognitive, organizational, social, and institutional. Cognitive proximity is related to the fact that "knowledge and innovations are often cumulative and localised outcomes of search processes within firms with a high degree of tacit knowledge" (Boschma 2005: 63). Organizational proximity refers to the organizational practices and interdependencies that facilitate interactive learning, while social proximity highlights the fact that economic activity is embedded in a social context (Granovetter 1985; Grabher 1993). Finally, institutional proximity refers to the presence of similar institutions, such as "a common language, shared habits, a law system securing ownership and intellectual property rights, etc" (Boschma 2005: 68) that provide the support for economic co-ordination. While Boschma (2005) is careful to state that these different types of proximity do not necessarily relate to geographical proximity, we will argue that the reason behind the emergence of mountains in a flat world is precisely the interdependence of all the different types of proximity and how these different proximities coalesce in large metropolitan areas (and hence in relatively reduced geographical scales from a world perspective). Our tenet is that large urban agglomerations provide the setting where economic and social actors benefit from proximity to other economic and social actors with whom they can relate from a cognitive, organizational, social, and institutional dimension, creating the adequate environment for exchanges of ideas, Jacobs' type externalities, innovation, and ultimately, economic activity and growth (Duranton and Puga 2001). In a

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globalized world large urban agglomerations provide the anchor for the flows generated by the information and knowledge society to take hold, making the idea of the 'death of distance' or of the emergence of a flat world, at best, only a half truth: it is true that advanced economic activity can now happen in more areas of the world than before, but, even in these places, it will tend to increasingly concentrate in a series of urban relational nodes that will become the mountains in a flat world.

The tectonic forces behind the emergence of these urban mountains are varied, but include factors such as innovation, spillovers, backward and forward linkages, specialisation vs. diversification forces, community and social capital, and, last but not least, the buzz of the city. Let us now briefly review some of these factors in order to discuss how their interaction shapes a much more complex geography of the world economy than that underlying Friedman's flat world metaphor.

4.1 Tectonic Plate Movements 1: Innovation and economic performance

When, in contrast to neoclassical assumptions, technology and human capital accumulation are fully recognised as the result of explicit decisions of economic agents, economic growth becomes "an endogenous outcome of an economic system, [and] not the result of forces that impinge from outside" (Romer 1994: 3). Technology, technological progress, and human resources – considered as the main forces "behind perpetually rising standards of living" (Grossman and Helpman 1994: 24) – become endogenous, and change differently in different territories according to the quality of human resources and to the amount of human and physical capital devoted to research and development (Romer 1986; Lucas 1988; Rebelo 1991). Innovation takes place where the adequate endowments of human and physical capital are located and, vice versa, innovation generates economic dynamism which attracts more human resources and more capital. Hence – and although technology has, in theory, the potential of weakening these agglomeration forces – under an

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endogenous growth framework, innovation and human capital will tend to co-locate in relatively compact geographical areas.

The potential for the concentration of economic activity and for divergence becomes more evident when issues such as the minimum thresholds of R&D and of appropriability of technology – highlighted by the neo-Schumpeterian strand of the endogenous growth approach – are considered. For R&D investment to be effective a minimum threshold of investment is necessary, making the relationship between investment in R&D and economic growth not linear. Furthermore there are strong threshold effects and external economies associated with R&D investment and returns from R&D rely heavily on the quality of the workforce conducting research, on the concentration of R&D centres in limited spaces, on the quality of the local human capital (Audretsch and Feldman 1996; De Bondt 1996; Engelbrecht 1997), and, above all, on the amount of investment (Scherer 1983; Dosi 1988). Hence, limited and/or dispersed investment in R&D in lagging areas may not yield the expected returns, as most R&D projects may lack the adequate dimension to conduct competitive research and local scientists and researchers are likely to be more isolated than in advanced technological centres. In addition, as will be discussed in further detail below, the local economic tissue may lack the capacity to successfully achieve the passage from technological progress to innovation and to economic growth (Rodríguez-Pose 1999). Most spaces in the flat world will thus be unable to innovate and can only hope to increase their innovation absorptive capacity. The net result will be the agglomeration of innovative forces in urban 'mountains', with innovation being generally related to the size of the urban agglomeration.

4.2. The impact of knowledge spillovers.

New knowledge, the ultimate engine of growth in the theories sketched above, is neither fully appropriable by its producers, nor exhausted after use. It is cumulative and can be diffused. Consequently the process of knowledge accumulation gives rise to spillovers which could benefit a

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whole set of potential (intended or unintended) beneficiaries. The degree and extent of the diffusion of knowledge spillovers has thus important implications for the possibility of considering innovation as a 'flattening' force. If spillovers were to be diffused globally without costs or frictions – making innovation instantly available to everybody as manna from heaven – innovation and technological change could benefit all countries, regions, and individuals regardless of their actual location [as sunlight in a flat landscape or, using Friedman's (2005) terms, as a powerful steroid fuelling globalization]. However, an increasing amount of empirical evidence seems to point in a different direction stressing, on the one hand, the place-boundedness of spillovers and, on the other, the complex mechanisms underlying their diffusion across distance. According to Audretsch and Feldman, "knowledge spillovers do not [...] transmit costlessly with respect to geographical distance" (1996: 256). Numerous empirical studies have shown that the returns linked to the transmission of knowledge are geographically bounded and suffer from important distance-decay effects (Jaffe, Trajtenberg and Henderson 1993; Narin, Hamilton and Olivastro 1997; Howells 2002). Knowledge and innovation tend to agglomerate geographically, with spillovers from research leading to the creation of self-reinforcing virtuous circles of accumulation and to the genesis of significant multiplier effects in technologically advanced areas (Verspagen, 1997). Technological improvements in communication infrastructures have not affected all kinds of information in the same way, while 'codified information' can be transmitted over increasingly large distances, 'tacit' knowledge is geographically bounded – or in Morgan's (2004) words 'locationally sticky' – and is also related to context and culture (Gertler 2003), contributing to the increasing concentration of innovation (Audretsch and Feldman 2004; Cantwell and Iammarino 2003). "Codifiable information […] is cheap to transfer because its underlying symbol systems can be widely disseminated through information infrastructure" (Leamer and Storper 2001: 650). However, information is not completely codifiable due to some specific features which, in some cases, make codification impossible or too expensive. "If the information is not codifiable, merely acquiring the symbol system or having the physical infrastructure is not enough for the successful transmission of a

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message" (Storper and Venables 2004: 354). Thus, in this latter case information is transmitted by face-to-face contacts, an intrinsically spatial communication technology. Furthermore, even if the transmission of formally codified knowledge is less sensitive to proximity relationships for its diffusion and more dependent on local absorptive capacity for its impact (Cohen and Levinthal 1990), research on patent citations suggests that proximity facilitates a faster diffusion of the latter kind of knowledge as well (Sonn and Storper 2008).

At least three mechanisms make knowledge and its transmission powerful forces for the genesis of mountains and valleys in the world economy landscape:

1) Local innovative activities are crucial for the production of new knowledge and the economic exploitation of existing knowledge given the presence of a minimum threshold. Such activities are not evenly distributed geographically and thus become a localised source of competitive advantage for some areas rather than for others;

2) Information is not automatically equivalent to economically-useful knowledge (Sonn and Storper 2008). A successful process of innovation depends on "localised structural and institutional factors that not only shape the innovative capacity of specific geographical contexts" (Iammarino 2005: 499) – as highlighted by the systems of innovation approach (Lundvall 2001), regional systems of innovation (Cooke et al. 1997) and learning regions (Gregersen and Johnson 1996; Morgan 1997) – but that also influence the capability of every territory to absorb and productively employ exogenous knowledge spillovers;

3) The evidence of the spatial boundedness of knowledge spillovers not only contradicts the idea of ubiquitous knowledge evenly available everywhere, but also helps explain how peripherality can persistently hamper regional innovative capacity after controlling for indigenous innovative efforts: the smaller the spatial extent of knowledge spillovers, the lower the exposition of peripheral areas to externally produced knowledge. While highly-accessible core regions can benefit from innovative activities pursued in their proximity, the spatial boundedness of spillovers prevents them

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from reaching peripheral remote regions. As a consequence, the stronger the spatial decay of the spillovers the more accentuated their tendency to develop localised pools of knowledge in central locations.

The processes which seem to be shaping this mountainous world economy are complemented and maximised by, but not limited to, geographical proximity. Boschma's (2005) cognitive, organizational, social, and institutional distances also play an important role. In conjunction with geographical proximity they all provide alternative means to reduce uncertainty and solve the problem of coordination, facilitating learning and innovation. This perspective on the process of innovation (and its diffusion) makes the picture even more complex: a country's, a region's, or an individuals' potential of becoming part of Friedman's level playing field depends on their capacity to develop a number of other proximity relations with other relevant actors. Not only the cognitive base of individuals and firms needs to be close enough to the sources of new knowledge, in order to allow its successful absorption and processing (cognitive proximity), but also the way in which relations between (and within) actors are shared in an organizational arrangement becomes crucial (organizational proximity). Furthermore, the exchange of tacit knowledge requires – at the micro level – trust "based on friendship, kinship and experience " (Boschma, 2005: 66) (social proximity) and – at the macro level – actors sharing "the same institutional rules of the game as well as a set of cultural values and habits" (p. 68) (institutional proximity).

The set of proximities needed to generate a virtuous circle of innovation – by allowing the emergence of complex innovative network relationships, operating between and across different scales (from local to transnational) – further contributes to the emergence of mountains in Friedman's flat world. From this perspective "innovation systems are a combination of intra-local, extra local and transnational network connections" which "are not just intra or inter-corporate in nature [as highlighted in Faulconbridge, 2006], but may also encompass other forms of social

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networks" (Coe and Bunnell, 2003: 454). These networks generate a multifaceted geography of relations in the world economy which may systematically favour some actors (those enjoying the best balance of the various proximities with the most innovative actors), while further marginalising those at the geographical, cognitive, organisational, social, and/or institutional periphery.

4.3. Backward and forward linkages and the "new economic geography".

A third tectonic force are the backward and forward linkages of the 'New Economic Geography' (NEG). The NEG has tended to highlight the increasing concentration of economic activity based on factors such as the interplay of agglomeration economies, backward and forward linkages, critical threshold and market size (Krugman, 1991), and, above all, falling transport costs (Krugman, 1991). The equilibrium depends on the interactions between agglomeration (economies of scale, home market effect, backward and forward linkages, labour pool) and dispersion (prices for intermediates, wages, competition) forces. Changes in transaction and transport costs (due to economic integration and globalization) modify the balance between these forces, eventually generating new core-periphery patterns.

Under a new economic geography framework, assuming a two region, two sector model – with cities specialised in manufacturing and services, and rural areas in agriculture – as trade in manufacturing increases, cities will grow, often at the expense of their rural hinterlands (Paluzie, 2001), reinforcing a core-periphery pattern. Hence, when a country opens to trade, imports and exports to and from the core areas contribute to expand their hinterlands at the expense of less developed areas. No longer are firms and industries subject to the maximum size constraint imposed by the limited demand of domestic rural markets – they can sustain growth, and agglomeration, by servicing foreign demand, and making use of cheaper foreign inputs. The incentive to agglomerate therefore increases alongside the increased market potential that cities, as the mountains in the flat world, have access to through the opening of export and import markets

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(Puga, 1999; Paluzie, 2001). As a result, opening to manufacturing trade tends to increase the incentives for firms, and workers, to concentrate in core areas, and in larger rather than in smaller cities, thereby fostering greater within country disparities.

4.4. Specialisation vs. diversification

The analysis of the impact of specialisation vs. diversification on innovation and economic performance sheds additional new light on the increasing success of cities and agglomerations in the era of 'Globalization 3.0'. While increasing specialisation is likely to foster MAR (Marshall-Arrow-Romer) externalities within the same industry, the diversity of economic activities pursued locally allows local actors to benefit from knowledge base complementarities and across-industry exchange of ideas (Jacobian externalities). The empirical literature suggests that both MAR (Glaeser et al. 1992; Henderson 1999) and Jacobian externalities (Andersson et al. 2005; Carlino et al. 2001; Feldman and Audretsch 1999) may play an important role in fostering innovation either in different industrial contexts[2] or at different phases of a product life cycle[3]. A crucial issue for the prosperity and success of cities stems from the capability to efficiently exploit MAR and Jacobian externalities. When other forces (historical, institutional, political) prevent the evolution of the cluster from reaching its most efficient equilibrium at any moment in time between both types of external economies, overall economic performance could be hampered. Diversified cities tend to be larger while specialised cities are generally smaller in size. Whereas both diversified and specialised cities can in principle perform equally well, the potential risks for specialised cities are greater[4]. These risks are related to their lower innovative capacity and their greater exposure to rise and fall patterns of specific sectors of specialised cities (Duranton and Puga, 2000). In the long-run,

[2] Henderson et al. (1995) find that Jacobs-type externalities prevail in high tech and MAR in capital goods industries.

[3] Duranton and Puga (2001) suggest that firms develop new products in diversified creative urban contexts, subsequently, relocating to specialised cities in the mass production phase in order to exploit cost advantage.

[4] Although many specialised cities are doing rather well in this 'flat world'.

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intervention in the form of policies that encourage labour mobility (mainly to larger diversified cities) in order to address the decline of specialised cities may be needed. Hence it is fundamentally the unique mix of social, institutional, cognitive, and organizational proximities found in large metropolitan areas that once again allows for the adequate linkages to be developed and for the right mix of specialisation vs. diversification to emerge.

4.5. Community, social capital and the creative class

Formal and informal institutions also play an important role in shaping the mountains of the uneven world we are depicting. Many of the agglomeration effects of the endogenous growth and new economic geography theories are reinforced by the predictions of numerous institutional theories that underline the role of institutions and institutional factors on economic activity. These theories, despite their different origins, coincide on the role played by institutions in fostering economic concentration.

Many studies have unearthed a close link between 'good' institutional conditions or the presence of strong communities and the clustering of economic activities. Qualitative work on clusters and industrial districts (e.g. Piore and Sabel 1984; Kristensen 1992; Semlinger 1993; Burroni 2001), 'learning regions' (Gertler, Wolfe and Garkut 2000; Henry and Pinch 2000; Bathelt 2001), and regional systems of innovation (Cooke and Morgan 1998) stresses how complex institutional and governance arrangements create the conditions for economic activity to thrive and ultimately – as good institutional conditions are hard to replicate – to agglomerate. Factors such as the close interaction among local political actors, the presence of a functioning civil society, regional administrations, employers organizations and trade unions – in what Trigilia (1992) calls an 'institutionalized market' – favour economic development and agglomeration. Well developed traditions, strong trade unions co-operating with employers, and nation-wide institutions work in a

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similar direction. Conversely, the absence of poles of collective action often leads to the formation of vicious circles of low growth. The lack or relatively little importance in social life of collective organizations, the presence of clientelistic practices, or the governing of social activity by simple social structures (often characteristic of relatively remote and backward spaces) facilitate migration and discourage economic activity.

Many quantitative analyses reach similar results. Putnam's work on Italian social capital (1993) shows how differences in levels of community institutions between Northern and Southern Italy are at the base of their sizeable income inequalities. Other research has found that different institutional proxies of community, such as group participation, help explain higher economic performance (Knack and Keefer 1997; Zak and Knack 1998; Beugelsdijk et al. 2004; Guiso, Sapienza and Zingales 2004), or that, conversely, excessive divisions within societies limit their growth potential (Easterly and Levine 1997; Rodríguez-Pose and Storper 2006).

Taken to its limits, some analysts indicate how having a high density of closely-knit institutional networks in close physical proximity – called 'institutional thickness' by Amin and Thrift (1995) and 'institutional capital' by Healey (1998) – is a key condition for economic development. Combinations of 'intellectual capital' (i.e. knowledge resources), 'social capital' (trust, reciprocity, cooperative spirit and other social relations), and 'political capital' (capacity of collective action) within these institutional networks determine the potential for development. The greater the density of complex institutional networks within a given territory, the greater the potential for higher growth and development (Amin and Thomas 1996; Morgan 1997; Cooke and Morgan 1998).

These structural sources of competitive advantage are far from vanishing in response to the process of globalization (let alone the ten 'world flatteners' singled out by Friedman). On the contrary, they

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are further reinforced by the increasingly important role played in today's world by 'creative' people. For Florida (2002) the future of local economies relies on attracting and retaining members of the 'creative class', comprising those who work in sectors such as technology, media and entertainment, and finance and whose activities embody creativity, individuality, and difference. And there is no better place to achieve this than in open and cosmopolitan cities that provide all what the 'creative class' are looking for in terms of alternative lifestyles, relaxed dress codes, flexible working arrangements, and leisure activities focused on exercise and extreme sports, and their preference for 'indigenous street level culture' (Florida 2002). The interaction between the enormous capability of the members of this 'creative class' to generate economic value and its unprecedented mobility gives cities able to develop adequate conditions (thanks to their endogenous socio-institutional capabilities) an enormous advantage over other areas and territories.

4.6 Buzz: The ultimate tectonic force

So far we have discussed the origins and mechanics of the forces responsible for the emergence of urban 'mountains' in today's world economic landscape[5]. We now need to take a closer look at the ultimate driver behind all these tectonic movements: the 'buzz' of the cities. By innovatively combining economic and institutional approaches to economic agglomeration Storper and Venables (2004) have proposed the theory of 'buzz' or of 'buzz cities': 'Buzz' is eminently about face-to-face contact. They argue that backward and forward linkages, access to markets, the clustering of workers, and technological interactions are not the only factors determining agglomeration. Any explanation of why economic activity is agglomerating more and more is incomplete without what they call the 'most fundamental' aspect of proximity: namely face-to-face contact (Storper and Venables 2004: 352). In this approach, face-to-face interaction is economically efficient, as it helps

[5] In many ways there is nothing new under the sun. The forces of agglomeration and urbanization described so far have been among the leading drivers of capitalism since, at least, the 16th and 17th centuries: well outside the scope of the twenty-first century history presented by Friedman. The logic of the process of territorial differentiation of the world economy seems to trascend historical shifts, even if the scale of this process is nowadays undoubtedly global.

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solve incentive problems, facilitates socialization and learning, and provides psychological motivation. And nowhere is face-to-face contact more likely to take place than in large and diversified cities. These cities – which Storper and Venables (2004) define as 'buzz cities' – put highly-skilled and motivated individuals in contact with one another, contributing to making people in a 'buzz' environment highly productive and encouraging cross-fertilization between sectorally-specialised networks. New activities are, thus, more likely to be developed in the 'buzz' centres where agglomeration forces are not only dependent on classical economic agglomeration economies, but institutional and 'buzz' factors are regarded as playing an increasingly prominent role in this direction. 'Buzz' is cognitive, organizational, social, and institutional proximity brought together in a reduced geographical environment and acts as the ultimate tectonic force for the emergence of mountains in Friedman's flat world.

What might be misleading at a first glance is that the most important buzz cities (e.g. London, New York, L.A.) are also the most globalized: they are nodes of international business, financial and cultural networks, locations of the headquarters of many multinational corporations; they are at the very centre of 'global' travel-and-meeting activities. However, "the highest levels of international business require insertion into locally-grounded government and political networks in order to function efficiently" and although "the precise mix of activities involving face-to-face contacts and collocation will change, they (…) will continue to generate agglomeration of highly skilled individuals, firms and bureaucracy in high-cost urban centres" (Storper and Venables 2004:366 and 368). This is reflected in Bathelt et al.'s (2004) 'local buzz, global pipeline' model, which explicitly brings extra-regional dynamics to light: extra-agglomeration knowledge flows complement local buzz by means of investments in channels of communication (pipelines). If learning is "increasingly inserted into various forms of networks and innovation systems (at regional, national and international levels)" (Asheim and Coen, 2006: 171), cities are likely to become the centres of the knowledge based economy thanks to their capacity to act both as buzz environments and major

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nodes of immaterial/a-spatial/ temporary networks. This process is not only about a few major world centres, but has produced a complex roster of cities where leading world cities in the major 'globalisation arenas' are functionally interconnected by an uneven world city system (Beaverstock, Taylor, and Smith, 1999). Furthermore, the increasing importance of cities is likely to be complemented by the emergence and reinforcement of a number of highly specialised high-tech centres of excellence where the importance of global interconnections may complement and even exceed that of local buzz (Moodysson et al., 2005).

By enabling face-to-face contacts and the transmission of uncodified/tacit (or uncodifiable) knowledge – often in conjunction with their role of major nodes of (material and immaterial) global network relations - 'buzz' cities benefit from an enduring competitive advantage over other territories which reinforces other agglomeration forces in a process of cumulative causation. Local innovative activities allow better local economic performance but also produce localised knowledge spillovers whose beneficial effects not only depend on proximity relationships, but also on the presence of local institutions (or social filters) enabling their absorption and translation into further economic growth. However, the appearance of new mountains in the economic landscape or the surge of existing ones also depends on other localised factors such as a favourable balance between specialisation and diversification and an efficient equilibrium between agglomeration and dispersion forces. The unprecedented pace of the shifts of the technological frontier in a large number of sectors has also brought the role of a class of 'creative people' continuously involved in the generation of new ideas to the fore. Innovation and ideas are exchanged, diffused, and cross-fertilised in the urban areas able to develop the adequate environment in terms of its capacity to attract and retain creative people and, last but not least, maximise face-to-face contacts. Once this process is activated it has an enormous cumulative potential: the productivity of local innovative activities is significantly enhanced when the conditions mentioned above are met, generating the economic incentive for further investment. New investments in innovation, in their turn, not only

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produce localised spillovers but also directly and indirectly increase local absorptive capabilities and stimulate the continuous updating of the local socio-institutional environment. A favourable socio-institutional environment is, in its turn, prone to the development of outward connections, extra-regional interdependencies, and global network relations.

This process creates progressively higher mountains in the world economic geography. However, the whole system is highly dynamic and big radical shifts in the technological frontier may allow – as in any active tectonic period – new windows of opportunity to be opened (and others to be closed) thus allowing new cities and agglomerations to emerge in the global landscape but, at the same time, condemning other areas to economic decline.

5. Conclusions

Friedman has created a powerful metaphor to describe the effects of the ongoing change of the world economy. According to him, technological change, in general, and the advances in information and communications technology (ICT), in particular, have, over the past three decades, radically flattened our world. Technological change has not only been the single most important force behind the process of economic growth but it has also enabled the "widening, deepening and speeding up of worldwide interconnectedness in all aspects of contemporary social life, from the cultural to the criminal, the financial to the spiritual" (Held et al. 1999: 2) that may be referred to as globalization. The progressive liberalisation of the movements of capital and labour, the sharp reduction in the cost of international and intercontinental travel, as well as the purportedly progressive convergence towards 'global' cultural models, and, above all, the frictionless availability of information and knowledge determine an ever-decreasing influence of both physical distance and the underlying contextual conditions upon economic interactions. Faster and cheaper access to information and technology has also led to a restructuring of how we conduct business all

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over the world and contributed to dismantle the barriers that anchored economic activity to specific locations. The consequence of all these changes is a better world: a world where neither the distance between the economic actors – be it cognitive, organisational, social, institutional or geographical – nor the contextual condition in which their interactions take place would matter any longer; a world where information "once available only to the few would be available to the many, instantly and (in terms of distribution costs) inexpensively" (Cairncross 1997: 4); a world where every economy has a similar chance of exploiting and maximizing the opportunities of global interaction, regardless of its geographical location and its indigenous conditions. In brief, a world where more and more people are empowered by this access to information and become more conscious of the need to engage and compete as individuals in an integrated world. For Friedman the world is flat and, as a result, we are all better off.

As Friedman himself acknowledges, the empirical evidence available does nevertheless not support his vision of the world. "The bad news in Africa today, as well as rural India, China, Latina America and plenty of dark corners of the developed world, is that there are hundreds of millions of people who have no hope and therefore no chance of making it to the middle class" (Friedman 2005: 462). Yet, despite acknowledging this in his 'Unflat world' chapter (one chapter out of 15), Friedman still falls victim of his own metaphor.

However, the sheer evidence that not all people and territories can benefit equally from the changes that Globalization 3.0 brings about ends by forcing him to describe the geography of the world in a more nuanced and perhaps more realistic way: "there's not just the flat world and the unflat world. Many people live in the twilight zone between the two" (Friedman 2005: 470). And the reality is precisely that, the world is not flat. The powerful tectonic forces linked to globalization are shaping a world where there are winners and losers; where the winners are precisely those that can maximize the opportunities for innovation, economic activity, and growth that real time access to

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information offers. The information revolution has opened new windows of opportunity so that new actors may emerge in the global arena while others have been closed, provoking the relative decline of some previously leading regions. In addition, some economies have remained marginal in the world economic panorama. The new technological regime is producing a thoroughgoing reorganisation of the world economy, rather than a global trend towards similar development levels made possible by ubiquitous economically productive knowledge. In this new geography of the world large cities emerge as the real winners, as they provide the right environment to allow economic agents to thrive. So the irony is that the flat world is full of high peaks.

And not everyone is capable of climbing these high peaks. Just as the average citizen of the world would not even dream of climbing the Everest, only professional mountaineers – those who are really being empowered – dare to venture into the peaks created by globalization. As in any elite sport discipline, the real players, the real mountaineers, are just a chosen few, mainly made of multinational firms and high-flying executives. Most of the rest of us just have to be content with watching the mountains from a distance and hope that we would eventually benefit from their ascent.

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