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To cite this article: Theo Papaioannou (2024) Bridging the Gulf Between Development Theory and Innovation Theory: The Imperative of Relational Justice, Forum for Development Studies, 51:3, 411-438, DOI: [10.1080/08039410.2024.2351881](https://doi.org/10.1080/08039410.2024.2351881)

To link to this article: <https://doi.org/10.1080/08039410.2024.2351881>



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Published online: 14 May 2024.



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Bridging the Gulf Between Development Theory and Innovation Theory: The Imperative of Relational Justice

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Abstract Phenomena of global development and technological innovation have been theorised and debated from an evolutionary common ground of social, economic, and technical change. However, apart from this common ground, there is a gulf that needs to be bridged. In several respects, development theory is preoccupied with social values such as inclusion and equality whereas innovation theory is preoccupied with economic values of economic growth and maximisation of aggregate utility. This gulf of competing values underpins public policies which are unable to deal with modern day crises such as poverty, inequality, environmental degradation, and unsustainable development. I argue that the gulf between development and innovation theories can be critically re-thought and permanently bridged using a relational notion of social justice that can allow inclusion/equality to be affirmed without disincentivising growth/utility. Such a notion of social justice should be only concerned with equalising resources in as long as this mitigates or eliminates relational inequalities such as hierarchies, oppression, and domination in globalised societies.

Keywords: global development; technological innovation; political theory; relational justice; public action

1. Introduction

Roughly speaking, in social sciences, global development and technological innovation have been theorised and debated from a common ground of social, economic, and technical change. Thus, thinkers ranging from Smith (1976) and Marx (2000) to Schumpeter (1983) and Polanyi (1944), and Freeman (1987) agree that phenomena such as the constant improvement of human life conditions and technological innovation are evolutionary in nature. They are the outcome of long historical, and often, discontinuous processes which involve what Hart distinguished as ‘Development’ i.e. top-down political and other interventions to promote change, and ‘development’ i.e. bottom-up social change that involves power struggles and everyday actions (Hart, 2010). Hart’s distinction can be also replicated to ‘Innovation’ i.e. top-down state interventions (e.g. through research and development policies) to

promote technical and technological change, and ‘innovation’ that involves bottom-up technological change through everyday incremental innovations.

However, neither innovation nor development can be framed in essentialist terms. Both concepts are western-centric or western-originated concepts of modernity. In this sense, they promote change through reason. Whether designing and implementing technical development plans for industrialised countries or formulating critical political theories of change (Telleria, 2024), innovation and development are founded upon epistemologies which accept rationalism and empiricism as sources of truthful scientific knowledge. Historically, these epistemologies were introduced in the global North, assuming reason as the core of universal human essence.

Yet, apart from this common ground, between innovation and development there are methodological differences as well as differences of normative values. The latter refer to values which enable judgements of social, economic, and political actions towards specific directions of interest. This paper is mainly focused on differences of normative values, addressing the following key question: how can the normative gulf between **D**/development and **I**/innovation be bridged? This gulf is predominantly concerning the direction of development and the direction of innovation as two distinct processes of change. In several respects, development theory is preoccupied with normative values such as inclusion and equality whereas innovation theory is preoccupied with normative values such as economic growth and maximisation of aggregate utility. According to Acemoglu and Johnson (2023, p. 3), the utilitarian view of innovation is that

New technologies ... expand human capabilities and, when applied throughout the economy, greatly increase efficacy and productivity. Then, the logic goes, society will sooner or later find a way of sharing these gains, generating benefits for pretty much everybody.

By contrast, the egalitarian view of development understands technological change as a process that cannot automatically lead to social progress. Instead, it presupposes public action in order to be directed towards inclusion and equality. Eliminating exclusions such as ‘we vs they’ ‘civilised vs uncivilized’ ‘developed vs under-developed’ has been preoccupying development, especially in the post-colonial era.

To put it another way, for a critical mass of development theorists, the direction of social and economic change ought to be towards inclusion/equality whereas for a critical mass of innovation theorists, the direction of technological change ought to be towards growth/utility. Of course, these two different directions are not fixed. Innovation and development are evolving concepts, going through different stages of historical development. Even so, the different directions they prescribe have led to distinct and often contradictory policies. On the one hand, social welfare policies for redistributing the benefits of economic development from the rich to the poor, and on the other innovation policies for increasing research and development (R&D) and entrepreneurial activity. As Jimenez et al. (2022, p. 1633) note, underlying

many of innovation policies ‘... there is a pattern of assumptions that tends to naturalise the emergence of innovation within a logic that prioritises economic growth, encourages an individualistic approach to work and resource distribution, and ultimately reinforces a western mode of thinking’. Although the hope for innovation policies has always been that they would enable benefits to trickle down to everyone, the hope for development policies has always been that they would redistribute benefits on the grounds of human rights and social justice. Given the interrelation between innovation and development, the gulf between their distinct values needs to be bridged in such a way that inclusion/equality and growth/utility can be affirmed without prioritisations and/or contradictions. The ambition here is to build on but also to go beyond critical theorists of innovation and development (Levidow and Papaioannou, 2017; Pansera and Owen, 2018; Smith et al., 2017) who have so far prioritised inclusion/equality over growth/utility. The significance of doing so has to do with the fact that both inclusion/equality and growth/utility are important and rather indispensable of any innovation and development process. Therefore, one should not be prioritised or sidelined over another.

In this article I employ a combined historical/philosophical analysis of competing schools of innovation and development thought to suggest the following: a normative bridge between innovation and development can be constructed by using a relational theory of social justice that can allow inclusion/equality to be affirmed without dis-incentivising or side-lining growth/utility. Such a third theory of social justice should be based on a critique of the distributive notion of egalitarianism that demands equal share of material benefits of innovation and development (Arneson, 2004; Cohen, 1989; Dworking, 2000). Instead, it should be concerned with distributing equally material benefits of innovation and development (i.e. resources) only so long as this equalisation eliminates hierarchies, oppression, and domination in globalised societies. Provided that elimination of relational injustices is achieved and so there is no longer hierarchy, oppression and domination, inequality of material benefits of innovation and development might be justified as a matter of incentive for people who chose to introduce new products to the firm, to the market or to the world. If inequality of these benefits is marginal and hence it does not cause unequal social relations e.g. hierarchies, oppression, and domination, then we have reasons to maintain such marginal inequality as an incentive for innovation.

The remainder of this paper proceeds as follows. Section 2 reviews key stages of development theory and discusses their emphasis on structural transformation through normative values of inclusion/equality. Section 3 analyses innovation schools of thought, including mainstream schools of research and development (R&D) driven innovations versus alternative schools of grassroots innovations, highlighting the gulf between their values of growth/utility and development values of inclusion/equality. Section 4 attempts to bridge the gulf between innovation and development theories by means of a third theory i.e. a relational theory of justice. Section 5 concludes the paper by summarising its overall argument.

2. Development theory

For the purpose of our argument, it is important to be reminded of some key historical stages of development theory and its emphasis on values of equality and inclusion. In what follows, we provide a brief (and broad) review of five stages which can be distinguished on the grounds of fundamental arguments about **D/d**development. These arguments have evolved and shaped the way we think about development.

2.1. Stage 1: the classical liberal origins of development theory

The origins of development theory can be traced back to the eighteenth century writings of Adam Smith who, through his *An Inquiry into the Nature and Causes of the Wealth of Nations* in 1776, generated a theory of growth of national wealth. The two main components of his theory were the notion of division of labour and the idea of land as a means of production. The division of labour implied specialisation that enabled the generation of surplus of agricultural production and the initiation of manufacturing. This, in turn, gave rise to the notion of free market as an institutional structure within which sellers and buyers of products can engage in free exchange because of mutually agreed contracts. According to some neo-liberal interpretations of Smith, the market is a self-regulating institution or indeed a ‘spontaneous order’ guided by abstract rules of freedom and equality before the law (Hayek, 1960).

Notwithstanding these neo-liberal interpretations of Smith’s theory, it is clear that his vision of development had strong moral foundations. In his *The Theory of Moral Sentiments* in 1759, Smith set out the ethical norms of individual action and implicitly introduced values of inclusion/equality through his concept of ‘sympathy’ i.e. the ability of individual actors to share the sentiments of others and therefore to mitigate self-interested actions. Smith’s theoretical construction of the ‘impartial spectator’ who sympathises with unjust poverty and inequality provides an evaluative framework within which structures and institutions such as the market can be judged in accordance with their outcomes. If these outcomes are predominantly exclusive and unequal, then the state can be justified by the impartial spectator to intervene to rectify the injustice. In Smith’s theory, the state ought do what the market fails to do namely, maintain justice, order and peace in society. In addition, it should promote free trade with other nations because exchanging goods at international level is to the mutual advantage of all the nations involved. For Smith, free trade was key to economic development.

2.2. Stage 2: the Marxian critique of development theory

This classical liberal strategy of economic development was taken forward by nineteenth-century thinkers such as Ricardo and Mill who criticised protectionism and advocated specialisation in production for establishing comparative advantage in free trade. Neither Ricardo nor Mill conceived economic development in strict

terms of economic growth and maximisation of utility. Rather, their utilitarianism and liberalism were deeply moralistic in nature. For example, they criticised privilege and consumption of luxury goods by aristocracy. Their long-term perspective of development was not positivist or naturalist. Rather, it was founded upon principles which demanded state policies to reduce hierarchies and unproductive privileges.

Certainly, after Ricardo and Mill, the thinker who contributed enormously to development theory was Marx. His critique of bourgeois' political economy and his theory of historical materialism revealed the relational contradictions and injustices at the heart of industrial capitalism. Marx exposed the material basis of bourgeois' notion of freedom in the market and the alienation of workers within the manufactures and the social division of labour of industrial capitalism. His interconnection of economic forces of production with social relations of production provided clear explanation of capitalist development through exploitation of workers as well as an evolutionary theory of historical change to a just society without a social division of labour and separation of social classes. In Marx's perspective, such an inclusive and equal society could only come about in a revolutionary way, by transforming social relations in line with transformed forces of production. Although this perspective proved to be utopia, the Marxian theory of development remains influential among scholars of socio-economic and political change. The values of inclusion and equality continued to be strong in the writings of these scholars. For them, unless economic change took place, social change towards inclusion and equality (i.e. classless society) would not be feasible.

2.3. Stage 3: the reconstructions of liberal and Marxian theories of development

Certainly, catch-up, growth and dependency theories of development in the twentieth century drew on Marxism to analyse the different historical trajectories of the 'First World' of capitalism, the 'Second World' of communism, and the 'Third World' of developing countries. However, quite often, these theories would also recognise that the primacy of economic forces in the conceptualisation of change was not telling the full story of **D**/development. Rather, non-economic forces, including ethical and political ones, first identified by Weber, could add significantly to development theory. Weber clearly focused on human action driven by value commitments and not just by socio-economic structures. In this sense, he positioned his economic sociology against Marx's historical materialism, undermining the deterministic economic approach to Marxian values of inclusion and equality. Weber (1958) asserted the primacy of politics over economics and therefore shifted attention to the role of state bureaucracies (instead of class struggle) for explaining the birth and direction of capitalist development. For him, the latter was a process of rationalisation and goal-oriented action that side-lined beliefs in magic and superstition and instead focused on efficiency of economic system.

Clearly, Weber's theory of development defended individual freedom as a central value for motivating action. Catch-up theories, especially nationalist ones, shared a lot of Weberian ideas about development with focus on national states. From List (1909) to the German Historical School of Hildebrand, Knies and Schmoller, the focus had been on the long-term progress of rationalisation and development of productive capacity within nations. In contrast, communist versions of the catching-up approach shared a lot of Marxian ideas about the emergence of a classless society from within capitalism. The Bolshevik's revolution in 1917 had impact on these catch-up theories, given their attempt to explain the revolutionary emergence of communism in the absence of a fully developed capitalist system in Russia. One such explanation was that Russia could avoid the exploitative and unequal relations of capitalist industrialisation and thus move directly to socialism drawing on the communitarian values of Russian villages (as opposed to individualist values industrialised cities). Russian Marxists from Plekhanov to Lenin clearly opposed this rather romantic view, criticising Russian villages for backwardness and superstition (Payne and Phillips, 2010). In his *The Development of Capitalism in Russia*, Lenin argued that capitalism was already advancing rapidly in the country (Payne and Phillips, 2010) but the proletariats would never develop class consciousness by themselves. Rather, they would have to be led by the organised Party to become hegemonic force of change (McLellan, 2007). Lenin did not think this would happen soon and that's why the 1917 revolution came as a surprise to him and other orthodox Marxists. After the Bolsheviks' revolution, the country had to create productive capacity to catch up with the rapid development of the capitalist West. The latter very much rested upon a neo-classical approach to economic equilibrium that ignored the macro-economic perspectives of political economy in favour of an abstract idea of marginal utility in the free market. Keynes opposed this approach, focusing instead on the relationship between savings, investment and output.

After World War II, the growth theory of development became dominant in both the global North and global South. Economists such as Arthur Lewis translated growth theory into the study of development. They argued for a close relation between growth, technology, and capital investment. Developing countries had to move away from the trap of traditional activities and endorse dynamic economies. These economies were predominantly capitalist, relying on primitive accumulation and the re-investment of profits in market opportunities. The contrast between tradition and modern capitalism within the so-called growth theory provided the basis of the so called modernisation movement that dominated development for at least two decades, especially after the infamous Truman inaugural address in January 1949. Truman's 'democratic fair deal' for the developed and the underdeveloped world was interpreted as a deal for modernisation. Thinkers such as Rostow (1960) theorised this deal into five simple stages of transition through which all countries had to pass:

1. The traditional society
2. Preconditions for take-off

3. The take-off
4. The drive to maturity
5. The age of mass consumption

This linear and structural process of modernisation clearly abstracted from contextual and historical facts of many countries. In fact, it was biased towards liberal capitalism, ignoring diversity of models and actors of development. Against socialist and communist models of development, as Payne and Phillips (2010, p. 68) observe, 'Rostow was concerned that the United States should support, aid and protect modernisation processes whenever they were occurring in the world'. In Rostow's view, economic growth and modernisation can only be achieved through the liberal market and after societies pass the five stages he identified. In newly independent nations e.g. India, this view was very much embraced by educated elites who were significantly influenced by western education systems (Pansera et al., 2020).

Although some scholars of modernisation theory draw parallels with Marx's theory of development, Rostow did not provide a historical account of change. He provided a rather simplistic approach to development that invited strong criticism from structuralist and dependency theorists. These neo-Marxist theorists argued that the underdevelopment of the 'Third World' is much more complex than simply a failure to go through from one Rostowian stage to another. From Seers and Singer to Myrdal and Prebisch, the so-called dependency theorists emphasised the importance of historical context of development. The world was divided into strong central economies and weak peripheral economies. Due to imperialism and colonialism of the past, several peripheral economies were path dependent and exploited by central economies. For example, Latin American and African economies were path dependent and exploited by European economies. Prebisch and Singer demonstrated the unequal relationship between central and peripheral economies through their critiques of the terms of international trade which tend to benefit more the developed countries in the global North than the developing ones in the global South.

However, neo-Marxist theorists such as Laclau (1971) expressed scepticism, arguing that dependency theory missed the importance of capitalist mode of production in the historical process of development. The evolution of class relations through the transition from one mode of production to another would be key in the 'Third World'. In essence, neo-Marxists put forward the postulate of getting development theory back to Marxism. Thus, theorists such as Poulantzas (1976) and Miliband (1973) centred development in the state that was re-conceptualised either as an instrument of the bourgeoisie (Miliband) or as a class relation determined by the social division of labour (Poulantzas). As an alternative, neo-Marxists promoted the idea of democratic socialism that included strong values of inclusion and equality. Yet, as Payne and Phillips (2010) stress, the rise of Japan and East Asia as development powers and the divergence of strategies for growth led to substantial criticism of the Marxist approach to development. Values of inclusion and equality were disincentives

for growth and maximisation of utility in these countries. Therefore, the developmental states of Japan and East Asian countries had to prioritise the latter and underplay the former as moral justifications of development policy and practice.

2.4. *Stage 4: the neo-liberal era of development theory*

The birth of neo-liberalism started around the end of the 1970s bringing up fierce critique of the state and glorification of the market. Theorists such as Hayek (1960) and Friedman (1962) conceived development as a spontaneous process of growth that is driven by the unintended consequences of individual actions. Methodological individualism was at the heart of neo-liberal approach to development. In terms of values, neo-liberalism affirms freedom and abstract equality before the law. However, it rejects epistemologically and politically the notion of social justice (Papaioannou, 2012). For example, in his *The Constitution of Liberty*, Hayek (1960, pp. 259–260) criticises the desire of welfare state to use its power

... to insure a more even or more just distribution of goods. Insofar as this means that the coercive powers of government are to be used to insure that particular people get particular things, it requires a kind of discrimination between, and unequal treatment of different people which is irreconcilable with free society.

This rejection of social justice has led to uncompromised policies of growth and maximisation of utility. Values of inclusion and equality took different meanings during the peak of neo-liberalism in the 1980s and 1990s. Specifically, inclusion meant participation in the free market and equality meant equal treatment before the law. Clearly, the original conceptions of inclusion and equality from the point of view of social justice were now under attack even though they had guided state intervention in the post-war era. However, as Pieterse (2010, p. 43) points out

The period 1980-2000 in many parts of the world witnessed the marginalisation of the state and the ascendancy of market forces. The renewed predominance of financial capital since the 1970s and the cycle of debt expansion and debt crisis turned the IMF and World Bank into arbiters of development policy, with the banker's orthodoxy of sound money, or monetarism, being recycled as the newest beacon on the development horizon.

The underpinning values of neo-liberal development were growth/utility.

2.5. *Stage 5: alternative development and post-Development*

Although neo-liberalism is still dominant today in terms of prescribing a structural transformation that is centred in the market, there is an emerging set of alternative theories which offer counterarguments. These arguments not only reject the neo-liberal market as a drive of development but also the Keynesian welfare state and the socialist state. Rather, they put forward what has been called an 'alternative development'

paradigm to emphasise local development, participatory and inclusive practices on the ground. For example, an empirical study of development politics failure in Lesotho by Ferguson (1990) reveals depoliticisation of poverty and inequality. As an alternative, it suggests greater political engagement and solidarity within non-state movements and organisations which challenge mainstream government. According to Pieterse (2010, p. 85) ‘Over the years, alternative development has been reinforced by and associated with virtually any form of criticism of mainstream developmentalism, such as anti-capitalism, ecofeminism, democratisation, new social movements, Buddhist economies, cultural critiques and poststructuralist analysis of development discourse’. Indeed, most theories of alternative development emphasise bottom-up development or development from below through community involvement and grassroots movements. For example, Li (2007) examines the developmental process of Indonesia, rejecting the view that outside interventions can improve peoples’ lives.

A parallel narrative is what has been often described as ‘post-development’. Post-development questions the very notion of development as ‘... a discourse of western origin that operated as a powerful mechanism for cultural, social and economic production of the Third World’ (Escobar, 2015, p. 454). Post-development rejects the objectives and values of economic growth and instead emphasises the importance of people and their sustainable environment. The publication of Sach’s *The Development Dictionary* (1992) initiated what might be called era of post-development theory. The latter was taken forward by Escobar’s *Encountering Development* (2012) and Rist’s *The History of Development* (2003).

Akin to post-modernist critique of development, post-development theory has claimed that ‘development’ as such was just an invention. This concept is, in fact, Eurocentric and relies in the discursive domination of Western modernity (Madrueno and Tezanos 2018). In the words of Escobar (2012, pp. xii–xiii) ‘... post development was meant to designate at least three interrelated things: first the need to decentre development; that is to displace it from centrality in representations and discussions about conditions in Asia, Africa and Latin America. A corollary of this first goal was to open up the discursive space to other ways of describing those conditions, less mediated by the premises and experiences of development. Second, in displacing development’s centrality from the discourse imaginary, post development suggested that it was indeed possible to think about alternatives as concrete possibility. Third, post-development emphasised the importance of transforming ‘the political economy of truth’ that is development’s order of expert knowledge and power’. Post-development theorists such as Escobar, draw on Foucault (1972) to argue that the origins of development discourse can be found in the colonial discourses which tend to divide the world into ‘developed’ and ‘developing’ countries.

However, it might be argued that, despite its valid critique, the discursive turn of post-development theory also meant that the economic conditions of capitalism ceased to be the primary concern of post-development theorists. Instead, their critique was directed to discursive aspects of neo-liberal development. As Escobar (2012)

admits, post-development meant to convey an era in which development would no longer be in the centre of economic and political life. Meanwhile, neo-liberal capitalist practice continued to advance in both the global North and the global South. The discursive approach of post-development seems to overlook the material reality of poverty and inequality, caused by the consolidated neo-liberalism. Any discourse is of course performative, and the discourse of neo-liberal development is in part responsible for the material reality of poverty in the first half of twenty-first century. Yet, post-development is a middle-range theory (Saad-Filho, 2024) that shifts primary focus away from material conditions of neo-liberal development to discourse of this model of development. In addition, as Saad-Filho (2024, p. 202) points out, ‘... stressing the local, can shift the focus away from systemic or society-wide processes that can condition or set limits to actions by individuals or small communities’.

Going beyond post-development, it seems the theoretical debate has now moved further to address other crucial issues such as decolonisation. The latter implies recognition that development, in several respects, still frames itself in accordance with current and historical legacies of eurocentrism, ignoring certain epistemologies of the South (Santos, 2018) and creating hierarchical dichotomies of knowledge. Santos (Santos, 2018) has argued that epistemologies of the South are inclusive of several kinds of knowledge and their articulations in struggles against domination and oppression. He calls such articulations as ‘ecologies of knowledges’ (Santos, 2018, p. 43) and distinguishes them from epistemologies of the North based on claims of objectivity and neutrality. In his view, such claims make no sense for establishing trust in scientific knowledge simply because trust is established through using knowledge against oppression. According to Santos (2018, p. 45)

... the epistemologies of the South do not, as a matter of principle, reject any form of knowledge. Regarding science, what is rejected is just its claim to the monopoly of rigour, that is to say, its pretention to being the only valid kind of knowledge.

It might be said that decolonisation presupposes the inclusion of the epistemologies of the South in order to eliminate relational inequalities in knowledge generation and exploitation. Such epistemologies have played crucial role in the struggles against capitalism, colonialism, and patriarchy. The ontological underpinning of these struggles is that there is pluriverse and not just one globalised world. As Escobar (2015, p. 460) points out ‘The ‘pluriverse’ is a way of looking at reality that contrasts with OWW [One-World-world] assumption that there is a single reality to which there correspond multiple cultures or subjective representations’. Pluriverse includes a variety of alternatives to development e.g. Buen Vivir, degrowth, ecological swaraj, ubuntu, social solidarity economy, etc. (Demaria and Kothari, 2017). These alternatives counter the hegemonic universalisation of Western epistemology and models which rely on dualisms such as mind/body, human/nature, nature/society, etc. Post-development is critical of human-centred views which undermine embeddedness of

human beings within social and ecological relational contexts (Castro-Sotomayor and Minoia, 2024).

3. Innovation theory

Like development theory, innovation theory has gone through some key stages of historical evolution. These stages consolidate its emphasis on values of growth and utility. In what follows, we provide a brief (and broad) review of the five stages of development of I/innovation theory.

3.1. *Stage 1: the classical liberal origins of innovation theory*

Like development theory, innovation theory emerged in the 18th and 19th centuries. Although, according to Godin (2019), the term ‘innovation’ was well known in the ancient Greek and Latin vocabularies of the 3rd and 4th centuries, the theory of positive impact of technical change on human life and socio-economic development began with the industrial revolution. Since then, it has spread in many social spheres. As Godin observes, ‘The concept of innovation has the capacity to travel among social spheres (like academia and policy), within a social sphere (different academic disciplines) and among institutions. It is a trans-discursive term that serves mobilisation’ (Godin 2019, p. 224). In all these spheres, innovation is mainly associated with technological change. Adam Smith, in his *Wealth of Nations*, establishes the direct link between the division of labour and mechanisation that leads to economic growth. In his view, technological change is about improvement of machinery through constant inventions. This process of innovation is very much collective. Smith (1976, p. 8) argues that

All the improvements in machinery ... have by no means been inventions of those who had occasion to use machines. Many improvements have been made by the ingenuity of the makers of the machines, when to make them became the business of peculiar trade; and some by those who are called philosophers or men of speculation, whose trade is not to do anything but to observe everything.

3.2. *Stage 2: the Marxian critique of capitalist innovation*

The notion of collective agency in the process of doing things in new ways can also be found later in Marx’s approach to innovation. Marx is focused on the bourgeoisies and their tendency to improve the means of capitalist production through a social division of labour. He argues that ‘The Bourgeoisie cannot exist without constantly revolutionising the instruments of production, and thereby the relations of production, and with them the whole relations of society’ (Marx, 2000, p. 248). This activity of technological innovation is for Marx a class feature and at the same time a driving force of evolution of production. Thus, it also determines social relations such as private ownership. The more innovative and developed the means of production, the more

necessity for change of the relations of production. Mismatch between productive forces and productive relations can lead to revolutionary change of society and political institutions. Like Smith, Marx thought of technological innovation as a liberating force. Yet, within capitalism, innovation could only maximise profit and utility for bourgeois. The latter have appropriated the means of production, excluding property-less workers (proletarians) who were forced to wage labour facing exploitation and alienation.

3.3. *Stage 3: the Schumpeterian theorisation of innovation*

Much later than Marx, Joseph Schumpeter, who is now regarded as the founding father of modern innovation studies, took the view that innovation is the ultimate driver of development and economic growth but not without unintended consequences. He drew attention to ‘creative destruction’ of capitalist innovation. On the one hand, innovation opens new opportunities and on the other it destroys old practices and technological processes. As he put it,

The opening up of new markets, foreign or domestic, and organisational development from the craft shop and factory to such concerns as U.S. steel illustrate the same process of industrial mutation – if I may use that biological term – that incessantly revolutionises the economic structure from within incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism (Schumpeter, 2010, p. 73).

Schumpeter’s early theory of innovation mainly focuses on individual entrepreneurs. In contrast to Smith and Marx, his perspective is about the short-term economic effects of entrepreneurial activity of individual actors in the market, including firms. These short-term economic effects are translated into utility. However, they do not necessarily determine the direction of economy and society.

3.4. *Stage 4: the neo-Schumpeterian consolidation of innovation theory*

After Schumpeter, scholars such as Freeman and Soete (1997) and Nelson and Winter (1982) have consolidated his theory of innovation in more explicit evolutionary terms which concern long waves of economic and social development. The neo-Schumpeterian reconstructions of innovation theory were explicitly institutional and not just focused individual entrepreneurs looking to maximise profit. The birth of innovation systems theory is due to increasing institutionalisation of neo-Schumpeterians as well as to revisiting Friedrich List’s theory of national political economy. The latter, insisted on the primacy of national economic interests over cosmopolitan ones. Thus, national innovation systems theorists such as Freeman and Lundvall argued for competitive advantage through a system of interconnected actors and institutions which promote learning and novelty. They also proposed that the global South could study the experiences of the global North. For this reason, a network for

economics of learning, innovation, and competence building systems (GLOBELICS) has been set up to bring together scholars of innovation systems from all continents. This network expanded in Asia (ASIALICS), Latin America (LALICS) and Africa (AFRICALICS) (Globelics, 2023). Yet some critical innovation scholars of the global South (e.g. Jimenez et al., 2022) complain that the innovation systems approach prioritises top-down policies applied in the industrialised global North as blueprints. According to them (Jimenez et al., 2022, p. 1636) the notion of innovation systems

... hardly goes beyond idealistic for policy imitation and adaptation, let alone implementation in practice. Furthermore, the strong reliance on certain institutional preconditions as necessary for innovation has resulted in only rhetorical attention being paid to political and historical conditions in the global South.

The main rationale behind the importance of national innovation systems has always been maximisation of aggregate utility. By encouraging interactive learning and generation of new products and processes, the assumption has been that benefits will ‘trickle down’ and everyone will be enabled to maximise utility. However, the ‘trickle down’ assumption excluded questions of unequal diffusion of innovation and claims of human rights. Innovation policy has been built on the grounds of maximising utility and not on the grounds of inclusion and equality. Such policy has dominated liberal economies until the first quarter of the twenty-first century.

3.5. Stage 5: the repositioning of innovation theory for social justice

Since the publication of Mazzucato’s *The Entrepreneurial State* in 2014, the tension between innovation driven utility and values of inclusion and equality has become more apparent. Mazzucato recognises the role of the state in innovation and raises questions of fair diffusion of technological products and benefits to society. She also challenges governments to think big and invest in missions for addressing global issues, including climate change, poverty, and inequality. Mazzucato draws on neo-Schumpeterian theorists such as Freeman and Perez to provide powerful critique of neo-classical theories of market failure. She reconstructs Keynesian arguments, emphasising the importance of state investment in economy and the end of casino capitalism. In her view, capitalism can be re-made to work for all, provided that its direction is decided through politics.

Mazzucato’s theory falls into what can be regarded as left-wing neo-Schumpeterianism. This is in contra-distinction to theories of right-wing neo-Schumpeterianism which appear to endorse a rather naïve socio-biological evolutionism, limiting the role of the state in innovation. This right-wing neo-Schumpeterianism directly challenges Mazzucato’s notion of the entrepreneurial state. Its proponents include Wennberg and Sandström (2022) who question the entrepreneurial state and warn that ‘... huge governmental schemes towards specific, noble outcomes have historically been plagued with failures’ (Wennberg and Sandström 2022, p. 3). Instead, they propose a

Hayekian approach to innovation that allows the market to determine the direction of technological change. This approach of right wing neo-Schumpeterians criticises government actors for lack of owners' responsibility and incentives as well as lack of real risk. More importantly, it rejects state interventions on epistemological grounds. According to Wennberg and Sandström (2022, p. 11) 'Top-down interventions aiming at directionality suffer from problems of dispersed knowledge emphasised by Hayek (1945)'. Other defenders of neo-liberal or libertarian forms of state dismiss Mazzucato's argument for the entrepreneurial state as partisan and shaky in terms of historical evidence. For instance, Worstall (2013) contests the entrepreneurial state argument on the grounds that technological innovation is not a public good and therefore the government is not justified to support research and development (R&D). In a similar manner, Mingardi (2015, p. 608) argues that '... in many respects it [the entrepreneurial state argument] suffers from the "is-ought" problem – that is, it makes too many claims about what we ought to be based on statements of what is'. He therefore accuses left-wing neo-Schumpeterians, especially Mazzucato, for developing arbitrary arguments, overemphasising 'a tiny bit of history' of the twentieth century and failing to provide a holistic historical perspective, including the nineteenth century industrialisation that was independent of huge public investment in R&D. In short, Mingardi regards the entrepreneurial state theory as ideological and biased towards a strong public sector. However, analysing his argument, one might also brand it as ideological, suffering from the same problem: lack of historical evidence. Mingardi's only counter historical examples are focused on the Industrial Revolution e.g. railways, failing to accept the historical fact that involvement of the state has been key for setting up collaborative knowledge and innovation ecosystems that delivered new technologies as both intended and unintended consequences of industrial policy.

Certainly, overemphasising the role of the market and dismissing the importance of the state industrial policy are rather unconvincing strategies for defeating the entrepreneurial state argument of left-wing neo-Schumpeterians. Although it is true that this argument implies businesses take less risk than the state (Westlake, 2014), it is also true that the latter has more substantial involvement in early stages of technological invention than the former. In addition, the problem of dispersed knowledge in the twenty-first century does not sound as a credible excuse for non-intervention in the market. Apart from the well-established wisdom that Hayek's epistemology is flawed (Papaioannou, 2012), one cannot plausibly claim that there is a lack of data and evidence for determining what works in innovation policy and practice. Rather, the argument of right-wing neo-Schumpeterians is ideological emphasising the importance of innovation from the point of view of utility and excluding arguments from the point of view of justice.

Against right-wing neo-Schumpeterians, Mazzucato and other innovation scholars (Chataway et al., 2014; Papaioannou, 2018; Stilgoe et al., 2013) propose to redefine innovation as inclusive and responsible, taking on board the interests and aspirations of the excluded. In this sense, they emphasise the importance of bottom up technical and technological change, for improving human lives but also democratising

institutions. Smith et al. (2017) offer a detailed analysis of grassroots innovation movements which push for such change. According to them,

Here are groups of people who are trying to create solutions to challenges as they see them, working to criteria that can differ from mainstream institutions and using novel forms for producing knowledge, appropriating technology and coordinating social organisation (Smith et al. 2017, pp. 5–6).

Grassroots innovation movements present alternatives to top-down technological change. The latter represents the hegemonic way of innovating in the global North. By contrast, grassroots innovation movements offer ‘... alternative ways of framing *post-growth innovation* and technology that are remarkably based on responsibility and reflexivity can be found in the South (Pansera et al., 2020, p. 99). For example, the so-called People’s Science Movements (PSMs) in India contribute alternative technologies to address challenges ranging from rural industrialisation and energy to nutrition and organisation of health systems. According to Smith et al (2017, p. 80)

PSMs are active in the districts of Mandi in Himachal Pradesh; Dehradun in Uttarakhand; Patalhot Sheopur and Kanker in Madhya Pradesh; Puducherry, Kanyakumari and Ramanathapuram in Tamil Nadu; Guntur in Andhra Pradesh; Koraput in Odisha; Agartala in Tripura; 24 Parganas in West Bengal; and Mumbai, Thane and Pune in Maharashtra.

These movements advocate for ecological, social and innovation justice for the Indian poor.

In this sense, they can be seen in parallel to post-development movements which promote people centred approaches to socio-economic and political change. To use the framing of Schot and Steinmueller (2018), grassroots innovation movements are involved in ‘transformative change’ (Schot and Steinmueller 2018, p. 1555) aiming at inclusivity and equality of new products and processes. This framing of transformative change takes a critical stand vis-à-vis other (previous) framings such as ‘national systems of innovation’ and ‘innovation for growth’ which predominantly focus on growth and utility. Yet the gulf between innovation and development remains unbridged given the lack of agreement on a broad theory of justice that can bridge inclusion/equality with growth/utility values. Certainly, as Schot and Steinmueller (2018, p. 1564) point out transformative change ‘... requires a deep involvement of development studies. There are signs of interactions between these fields emerging but overviews of innovation policies are often still far too limited in their scope’.

Like development theory, innovation theory is not homogenous. There are fundamental differences between theorists as regards their defence of normative values. Yet, even though innovation theory has evolved for more than three centuries, taking different directions, its core normative value has remained the same i.e. growth/utility. For this reason, whether classical, neo-classical, or neo-Schumpeterian, arguments and justifications for innovation across the world reflect the priority of growing the

economy and maximising the aggregate utility. Achieving inclusion/equality through innovation is a secondary concern or it is not a concern at all for some innovation theorists.

4. Bridging the gulf by means of relational justice

Throughout the five historical stages of evolution of **D**/development and **I**/innovation theories (see [Table 1](#)), it becomes clear that, despite overlaps and criticisms, these theories have championed different normative values. Most of development theory, over the years, has championed normative values of inclusion and equality whereas most of innovation theory has promoted normative values of utility maximisation and economic growth. This fact has been also confirmed by Mazzucato (2021, p. 189) who points out that

Discussions about how to decrease inequality are rarely linked to ones about innovation and wealth creation. The former tends to be more interested in social inclusion and reforms of the welfare state, and the latter in productivity and innovation policies and entrepreneurship.

The decrease of inequality has been the traditional focus of development whereas the increase of wealth has been the traditional focus of innovation.

Yet, it is also true that ‘Since the second world war and the demise of the colonial project, the term “innovation” has become progressively domesticated within the overarching discourse of progress and modernisation that has become known as “development” (Pansera and Owen, 2018). As a result of it, core innovation policies for maximising growth and economic progress have become synonymous to development policies. It might be argued that this historical fact does not necessarily imply any normative bridge between inclusion/equality and growth/utility. What does imply is that neo-liberal efforts to treat development as synonymous to economic growth and utility maximisation have run into contradictions. For this reason, neo-liberal development has been criticised for increasing growth (through innovation) and, at the same time, decreasing well being (through exclusion). By the same token, as Pansera and Owen (2018, p. 24) point out ‘The instrumental view that more technology and innovation is always better tempered by criticism that this neglected their political constitution, treating them un-reflexively as powerful but agnostic and apolitical force for good’. Indeed, science and technology studies (STS) scholars such as Winner (1980), Jasanoff and Kim (2009), Levidow and Papaioannou (2013) have insisted that technology and innovation are socially constructed, arguing about the importance of socio-technical imaginaries in policy and practice.

Of course, there is no doubt that development and innovation theories have been in constant interaction with each other since their birth. As Jimenez et al (2022, p. 1635) point out

Theory/Stage	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
D/development	<i>Classical Liberal Origins:</i> economic growth with moral foundations of inclusion	<i>Marxian Critique of Liberalism:</i> equal social relations through transformation of productive relations	<i>Reconstruction of Liberalism and Marxism:</i> modernisation through values of individual freedom vs critical values of social equality	<i>Neo-liberalism:</i> values of growth and utility through free market competition	<i>Alternative Development:</i> values of equality and inclusion centred on people and coming from the bottom-up
I/innovation	<i>Classical Liberal Origins:</i> growth and utility through technical division of labour	<i>Marxian Critique of Capitalist Innovation:</i> mismatch between productive forces and productive relations	<i>The Schumpeterian Theorisation:</i> maximisation of growth and utility through creative destruction	<i>The Neo-Schumpeterian Consolidation:</i> maximisation of growth and aggregate utility through evolution of technological innovation	<i>Repositioning Innovation for Social Justice:</i> inclusive and responsible innovation through state intervention

Table 1: Comparative summary of development and innovation historical stages.

... From classical modernisation discourses to neo-liberal free market approaches, all development perspectives advocate ideas on how to organise policies, economies, and societies. Key in these propositions is the role that innovation and technology should play as tools to support development efforts.

Indeed, this is the reason why growth perspectives of development mirror utility perspectives of innovation, and inclusive perspectives of innovation mirror equality perspectives of development. Yet the normative gulf between innovation and development theories remains very much unbridged. Historical research indicates that advances in new technologies and innovative capabilities have never had an automatic positive impact on development (Acemoglu and Johnson, 2023). In fact, most of these advances have been privileged over political notions of inclusion, widening the gap between innovation and development (Pansera et al, 2020).

The brief (and broad) historical reviews of development and innovation theories offered in previous sections, suggest that neither innovation theories nor development theories have put forward an explicit account of social justice. Development theory has refused to engage systematically with politico-theoretical arguments about relational and distributive outcomes of socio-economic and political change. Similarly, innovation theory has ignored evaluative arguments of social justice in the process of generation and diffusion of new technologies. Both development and innovation theories have made effort to come across as scientific theories driven exclusively by empirical data and not by normative value judgements. Yet, as Papaioannou and Srinivas (2019) show, there is a relationship between the vital dynamism of technological/development change and normative values. There is a need for more critical approach to values underpinning innovation and development.

On this basis, it might be argued that innovation and development theories might be complemented with a third theory that explicitly promotes normative values of morality i.e. a relational theory of social justice that can potentially allow both growth/utility perspectives of innovation and inclusivity/equality perspectives of development to be bridged without disincentivising one or the other. A relational theory of social justice takes the view that each member of society ought to stand in equal relations to other members of society. Proponents of relational equalitarianism such as Anderson (1999, 2012) and Scheffler (2005, 2015) have criticised the distributive notion of egalitarianism that holds that each member of society ought to enjoy equal share of the society's resources, including benefits of innovation. They have also defended a non-ideal notion of relational justice. Specifically, Andersen (1999, 2012) has claimed that normative theorising about justice cannot be founded upon philosophical constructions or indeed theoretical devices which are abstracted from historical facts. Instead, it can be founded upon empirically generated assumptions which succeed to pass a feasibility test i.e. a test conducted to provide evidence of whether a theory is feasible in real world. The aim of such theorising should be to

mitigate current injustices through sustainable policy instead of moving us from the current unjust state of the world to a perfectly just one (Volacu, 2018).

Although non-ideal theory comes across as less ambitious than ideal theory, it takes on board issues of partial compliance with relational justice and unfavourable circumstances. Anderson (2012) argues that ‘A system of principles that would produce a just world if they regulated the conduct of perfectly rational and just persons will not do so when we ask human beings, with all our limitations and flaws, to follow them’ (Anderson 2012, pp. 3–4). It is such motivational and cognitive deficiencies in human beings which point towards the importance of empirical investigation and diagnosis of the underlying causes of injustices and then the development of a non-ideal theory that could provide concrete and sustainable policy solutions to problems. As Anderson (2012, p. 6) puts it:

Non-ideal theory begins with a diagnosis of the problems and complains of our society and investigates how to overcome these problems. Non-ideal theory does not dispense with ideals but conceives of their function differently from ideal theory. In ideal theory, ideals function as standards of assessment for any society ... In non-ideal theory, ideals embody imagined solutions to identified problems in society.

Non-ideal policy solutions might be implemented or tried on the ground in order to deal with relational injustices. Such injustices can be scientifically identified through interdisciplinary methods of social research. In this sense, non-ideal theory turns to be more effective in terms of implementing relational justice in empirically contingent circumstances. It can function as a set of hypotheses to be tested in the real world. According to Anderson (2012):

We test our ideals by putting them into practice and seeing whether they solve the problems for which they were devised, settle people’s reasonable complaints, and offer a way of life that people find superior to what they had before. If they pass the test, this does not validate them outside history. Circumstances change, and new problems and complaints arise, requiring the construction of new ideals. If our ideals fail the test, we need to revise or replace them.

This constant testing of policy and practice solutions to identified problems of social justice constitutes the main methodology of a non-ideal and relational approach. Instead of using ideals as standards of social and political assessment of relational injustices, this theory uses ideals as policy reality tests.

Relational injustices are at the heart of innovation and development. As such, innovation and development are about technological and social changes which create opportunities for addressing such injustices but also pose risks of exacerbating them (Buchanan et al., 2011). According to relational equalitarians, these risks are not a matter of undeserved bad luck the impact of which needs to be eliminated, but rather a matter of unequal oppressive relations in society. It follows that the point of equality in innovation and development is not primarily distributional but relational.

This implies that we start off with identification of relational inequalities and then we move on to explain whether these inequalities are the consequences of identified distributional inequalities. The rectification of relational inequalities might be then a matter of dealing with distributional inequalities or a matter of dealing with other issues e.g. recognition participation, etc., (Papaioannou, 2018). To put it another way, not all relational inequalities in innovation and development can be resolved through equal distribution of resources. For example, the emerging relational inequality of digital coloniality i.e. the continuation of power dynamics between the developed and the developing world through digital structures which promote socio-cultural imaginations, attitudes and knowledge systems which persist from the colonial past and remain unquestioned in the present (Mohamed et al., 2020), cannot be resolved through equal distribution of digital technologies e.g. artificial intelligence (AI). It requires abandonment of eurocentrism and recognition and respect of epistemologies of the South in the technological process of algorithm development.

For innovation and development to embrace relations of equality, they must prevent people from entering superior-inferior relations in the process of knowledge generation, knowledge exploitation and technological change (Papaioannou, 2021). Such relations, whether they be marginalisation (e.g. of certain geographies in the Global South and/or excluded publics), hierarchy (e.g. scientists and technical experts versus practitioners), domination (e.g. scientific knowledge versus traditional knowledge) and exploitation (e.g. exploitative relations between companies and scientists), have no place in innovative and developmental communities of equals. As argued elsewhere, such communities are democratic in the sense that innovators regulators and users of technology for development are not in relations of hierarchy with one another, but in relations of equality. Relations of equality in innovation and development need to be protected from unjustified asymmetries of knowledge, undeserved inequalities of resources (e.g. unequal diffusion of benefits of innovation) deprivation of human capabilities, post-colonial dependencies and exclusions. However, such relations of equality are not absolute. If there are justified asymmetries of knowledge (e.g. if some persons chose to research more than others and therefore, generate more knowledge than others) and deserved inequalities of resources (e.g. if some persons chose to spend more resources for satisfying expensive tastes than others), then relations of equality in innovation and development are relative. The question that arises is this: what is the threshold above which such distributional inequalities become morally unjustified and unacceptable for an innovative and developmental society of equals?

As an answer to this question, it might be argued that a marginal threshold of distributional inequality very much depends on the circumstances under which it causes relational inequality. For example, the marginal threshold of distributional inequality of digital technologies (e.g. broadband, tablets, laptops, smart phones, software, etc.) under the circumstances of the recent Covid-19 pandemic, was at the point when it became evident that such inequality was no longer incentive for innovation but

instead it was causing relational inequality among children in online schooling and hence, creating an unjustified learning divide. Prioritising relational equality over distributional equality of resources in innovation and development implies that maximisation of growth and utility are morally justified and accepted only so long as they don't cause minimisation of relational equality e.g. creating oppressive or exclusive relations. This proposed threshold is in line with Moles and Parr (2019) argument that, in fact, distributive egalitarianism and relational egalitarianism are mutually supportive in a range of cases. According to them 'It is intrinsically valuable for individuals to stand in relations whereby each is able to justify her choices to others including her choice to retain possession of certain resources' (Moles and Parr 2019, pp. 138–139). Knowledge about where to draw the line between what is morally justifiable and what is not morally justifiable in terms of distributional inequality comes about through systematic investigation of specific claims of relational injustice in society. Only such investigation can reveal whether there is a deterministic relationship between distributional inequality and relational inequality under certain circumstances and justify political intervention.

Indeed, in significant cases of innovation and development, the equalitarian ethos does not necessarily restrict the libertarian ethos and the reverse. Thus, for example, when it comes to elimination of poverty and hunger or to achievement of quality education and gender equality (SDGs 1-5) we have strong reasons to secure for each member of society equal share of basic resources in order to ensure each member of society stands the chance of escaping poverty, receiving equal quality education and taking equal opportunities regardless of gender. To put it another way, in almost all significant cases of innovation and development (as reflected in the UN 2030 Agenda for Sustainable Development), we have reasons to distribute resources simply because we have reasons to ensure certain relations between members of society. As Moles and Parr (2019, p. 137) point out '... our concern for these kinds of relations also provides grounds upon which to object to highly unequal distributions or resources, even if no one is in particular badly off'. Highly unequal distribution of resources such as new technologies, food, energy medicines and knowledge, within and between countries, might be objected on the grounds of relational inequality they cause.

Within countries, development theory has tried to deal with such inequality through a conception of welfare state. Since the end of World War II, this modern state has funded an adequate education system, social insurance and pensions, public health care, etc. It has done so through a particular mechanism of distributing resources (e.g. the benefits of innovation and development), including income tax, corporation tax and value added tax (VAT). However, recent data (UNCTAD, 2021) reveals that within country inequality is on the rise again. This trend includes both developed countries such as the United States and the European Union and developing countries such as China and India. As UNRISD (2022, p. 2) stresses in the opening of its flagship report on *Crisis of Inequality*,

There is perhaps no more telling example of the way in which our current world order is bent towards justice than the Covid-19 pandemic, simultaneously so universal and experienced so differently from person to person and place to place. The period since the virus was first detected in early 2020 has been marked by extensive loss of life, severe economic downturn, the rolling back of many development indicators and an overall increase in poverty. Yet, at the same time, it also brought significant gains for a very small group of people

But it is not just inequality on the rise. Poverty has also dramatically increased. According to Oxfam (2023, p. 7)

Poverty has increased for the first time in 25 years. At the same time, these multiple crises all have winners. The very richest have become dramatically richer and corporate profits have hit record highs, driving an explosion of inequality.

Although dominance of neo-liberalism in public policies promoting the market (as opposed redistribution of resources through the welfare state) is one part of the explanation of rising within country inequality and poverty, technological innovation is the other part. The installation and deployment periods of new technologies such as digital technologies, big data, robotics, AI, drones and the Internet of Things (IoT) are uneven (Perez, 2002) generating winners and losers within countries. In her infamous *Technological Revolutions and Financial Capital*, Perez (2002, p. 51) argues that ‘This is a phase of fierce “free” competition, perhaps the closest to what textbooks say, though gradually leading in the end, and depending on the general degree of concentration of the epoch, to oligopolies or cartels by industry’. According to UNCTAD (2021) new digital technologies already represent a \$350-billion market and one that could grow to \$3.2 trillion by 2025. In order to deal with innovation-driven inequality some theorists and practitioners of development now propose to go beyond traditional welfare state policies and towards basic income distributive policies to equalise social relations affected by the digital revolution and other technological innovations (Plunkett, 2021). This proposal may be a good start but certainly not enough given the variety and depth of such inequalities. There is a need for identifying relational injustice systematically and as precise as possible first and then tailoring distribution of resources (including material benefits of innovation) in such way that can deliver just outcomes without disincentivising innovation. Dealing with relational injustice can only be a non-ideal process given the complexity of phenomena such as oppression, domination and hierarchies, and the lack of ideal distributional solutions.

Between countries inequality has decreased mainly because countries such as China and India have grown fast over the past decade. Other countries in Africa and Latin America have remained poor. Since the 1990s, the top 1 per cent of humanity has captured 20 times the amount of wealth as the bottom 50 per cent (UNRID, 2022). This bottom 50 per cent is mainly located in the global South. Development

theory has traditionally tried to deal with distributional inequality between countries through a conception of foreign aid as a tool of global distributive justice (Bigsten, 2017; Tezanos Vázquez, 2015). However, aid from the rich global North to the poor global South cannot reduce necessarily inequality. Rather, aid might be seen as a specific relation of gratitude that flourishes in the context of inequality. For example, government donors, members of the Development Assistant Committee (DAC) include rich countries such as the UK, France and Canada which spend billions of dollars in aid towards recipient governments of poor countries such as Ethiopia, Nigeria and Mozambique. Such relations of gratitude can only be initiated by those who have more resources than others. Poor countries might not necessarily welcome the help of rich countries because of fears about post-colonial dependences and financial forms of oppression. In any case, an increasing number of authors (Buss et al., 2015; Riddell, 2007) either consider aid to be unsuccessful in promoting global justice or they link to foreign policy and geopolitical interests.

Although development theory has criticised distributive tools such as aid from the point of view of structuralism and dependency, innovation theory has raised concerns about incentives for technological development and growth. Since the so called Sussex Manifesto (SM) (Singer et al., 1970) and the Appropriate Technology Movement (ATM) (Schumacher, 1973) in the 1970s and early 1980, which argued for the focus of research and development (R&D) agendas on needs of low-income countries, there has been an increasing number of scholars claiming that aid might disincentivise innovation unless it is well targeted onto developing capacity for knowledge development and industrial production. A 2007 UNCTAD report on this issue, confirms that foreign aid has been less effective than it should be simply because it is not focused on the development of science, technology and innovation in poor countries. On the contrary, it disincentivises such activities by offering easy hand outs for consumption (instead of production) (UNCTAD, 2007) and within countries.

To put it another way, to establish equal relations within and between countries, distributional inequality of resources should be limited to a morally acceptable threshold. The morally acceptable threshold of distributional inequality of resources (e.g. material benefits of innovation) is a threshold that does not create unequal relations of domination and oppression within and between countries. For example, it does not disadvantage vulnerable groups of a particular race, ethnicity, caste, citizenship status, gender identity, sexual orientation, age, disability; and it does not promote new forms of coloniality in digital technologies such as AI.

To paraphrase Rawls infamous difference principle: *distributional inequalities are just if and only if they're part of an arrangement that maintains relations of equality between all members of society*. In other words, the justification of marginal distributional inequality of resources such as material benefits and rewards of innovation, depends on the extent to which this maintains relations of equality between all members of society. Increase of distributional inequality above the threshold leads to creation of unequal relations of domination, oppression, and exploitation between

people. Therefore, distributional inequality ceases to be marginal and no longer constitutes an incentive of innovation. It's at this point that the state is justified to intervene to rectify relational justice through reduction of distributional inequality to a morally acceptable threshold. Since the neo-liberal shift that was promoted by powerful countries in the global North in the early 1980s, the state rolled back from interventions for reduction of inequality. Hence, the radical increase of relational inequality within and between countries.

Innovation and development cannot continue to maintain their distinct focuses on growth/utility and inclusion/equality respectively, as if these normative values are unbridgeable. Instead, they should adopt a relational theory of justice and use it as normative bridge between growth/utility and inclusion/equality. A relational theory of justice accepts a marginal threshold of distributional inequality of resources that incentivises the growth/utility drive of innovation without jeopardising the inclusion/equality of relations drive of development. No other inequality is justified in innovation and development. Narratives about innovators taking high risks and therefore deserving high rewards are not in line with the relational approach to justice in innovation and development. Instead, counter narratives developed by innovation theorists e.g. Mazzucato (2014), which emphasise risk-taking by both innovators and state actors, seem to be closer to the relational theory of justice in innovation and development. Recognising that state actors take risks in the innovation process provides additional justification for distributing the benefits and rewards of innovation according to the principle of relational justice. State actors and societies cannot be dominated by a few innovators (e.g. Apple, Amazon, Tesla, etc.) which appropriate the benefits and rewards of innovation. In fact, as Mazzucato (2014) demonstrates, the activities of some innovators e.g. digital platforms, are more about value extraction than value creation.

5. Conclusion

This paper has sought to review key historical stages of development and innovation theories in order to identify the normative gulf between values of inclusion/equality (development theory) and values of growth/utility (innovation theory). The argument put forward is that such gulf can be bridged by adoption of a relational theory of justice in innovation and development that allows for a symbiosis of values of inclusion/equality with values of growth/utility. By emphasising the primacy of relational equality between and within countries, relational equalitarianism allows for a marginal threshold of distributional inequality that is morally acceptable and provides sufficient growth/utility incentive for innovation. Although relational inequality is not absolutely determined by distributional inequality, the latter is a key factor of domination, oppression and hierarchy in innovation and development. By adopting a relational theory of justice, innovation and development can combine forces towards transformative change that delivers just outcomes for everyone.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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