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The hidden legacy of Samir Amin: delinking's ecological foundation

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ABSTRACT

This paper considers the relationship between Samir Amin's programme for delinking, smallholder agriculture, his theories of ecology, and the current of ecological dependency that developed out of North African dependency analysis. It argues that ecological forms of agriculture in fact underpinned the original case from which Amin derived delinking – the developmental model of Amin's China. It goes on to show how collaborators and fellow travellers of Amin like Mohamed Dowidar, Fawzy Mansour and Slaheddine el-Amami advanced the case for smallholder-centred national development, and connects their investigations to Amin's theoretical framework.

KEYWORDS

Samir Amin; dependency theory; Tunisia; delinking; agro-ecology

MOTS-CLÉS

Samir Amin ; théorie de la dépendance ; Tunisie ; déconnexion ; agro-écologie

L'héritage caché de Samir Amin : les fondements écologiques de la déconnexion

RÉSUMÉ

Cet article examine la relation entre le programme de déconnexion de Samir Amin, les petits exploitants paysans, ses théories de l'écologie et le courant de dépendance écologique qui s'est développé à partir de l'analyse de la dépendance nord-africaine. Il soutient que les formes écologiques de l'agriculture ont en fait sous-tendu le cas original dont Amin a tiré le concept de déconnexion – le modèle de développement de la Chine d'Amin. Il montre ensuite comment des collaborateurs et compagnons de route d'Amin comme Mohamed Dowidar, Fawzy Mansour et Slaheddine el-Amami ont fait valoir l'argument en faveur d'un développement national centré sur les petits exploitants, et relie leurs recherches au cadre théorique d'Amin.

In the 1970s and 1980s, an array of intellectuals in the Arab region anatomised the Bandung experiments in national developmentalism. The dependency paradigm was their sharpest scalpel. For the Egyptian economist Samir Amin, dependency explained how and why the attempts at incorporation into the world system did not succeed. As Amin showed, first in his 1957 doctoral dissertation, then in a blizzard of case studies and in one synthetic book after another, many of these projects were marred by import-substitution and export-oriented industrialisation and agricultural modernisation (Amin 1957, 1966a, 1966b, 1970, 1974b; Riad 1964). Some were thin-hulled

developmental vessels built to serve the interests of local elites. Others, even the best of them, only partially democratised production without democratising the management of society. As a result, they constantly leaked value into the world capitalist system. Stronger and more self-reliant models would, instead, have democratised production and consumption.¹ On the whole, the Bandung experiments were too radical for the imperialists and not radical enough to ride out the imperialist storm.² They foundered amidst external onslaught (Amin 1990a, 57ff).

It is crucial to note that from the moment of the making of the tool of dependency analysis, its purpose was not merely forensic. Economists and agronomists picking up the instrument were not pathologists. They sought to be healers. They wished not merely to understand the world, but to change it. Their criticisms were immanent, not chastising, and bound to social struggles striving for revolution. Furthermore, dependency's 'late' arrival to the region meant that it emerged pen-in-gauntlet with Maoism, rising in popularity with growing awareness of what was happening in China. Intellectuals, organisers and those who wore both caps increasingly went to the people (Ajl 2020).³ And they were increasingly enchanted with the example of the People's Republic, from whence they synthesised a strategy of auto-centred development based on delinking, a development strategy meant to subject external trade and financial flows to a popularly determined law of value.⁴

Amin has justly come to be the banner-holder for this notion, although, in fact, he developed his thinking in league with a layer of kindred intellectuals.⁵ They shared the core of his thought but developed it in unexpected directions. Such proposals ran the gamut: sovereign industrialisation, radical re-workings of the basic needs approach to development and, most strikingly, a proto-agro-ecological critique of agricultural modernisation. Yet this critique is scarcely known, a fact that is doubly odd when one considers it was not an awkward addition soldered onto the structural girders of dependency theory. In fact, the opposite was the case: methods of farming that might now be described as agro-ecological were part of the Chinese experience, a molten history that Amin and his fellow travellers re-cast into a novel model of popular development.

Tracing these lines of theory and history through Amin's work is overdue. In what follows, I first sketch Amin's model of accumulation on a world scale, and then explain urban workers' and peasants' places in delinking. I show how only partially known to him, agro-ecology – a mode of farming that seeks to fit agriculture into the ecology rather than run roughshod over it – *avant la lettre* underpinned the Maoist model. I then explore Amin's early ecological thought. I move on to how Egyptian and Tunisian economists and agronomists put their works out into the world at almost the same moment as Amin began to formalise the peasant path.⁶ They built up an ecological-dependency approach to traditional farming systems, manufacturing and national planning, influenced by China. I then note Amin's embrace of food and agricultural questions in the periphery of the world-system, through the populist idea and practice of food sovereignty. And I argue they are the basis for a model of 'planned and articulated accumulation *from below*' within which the state becomes the container and the shield for popular development (Moyo and Yeros 2011, 14, original emphasis).

Delinking and the global law of value

Many were beguiled by China in the 1960s and 1970s. In the 1970s and 1980s, even more in the development world began to discuss self-reliance (Nemchenok 2013, 131–147, 225ff). What set Amin apart was his emphasis on the holism of the historical process and his analysis of the polarising tendencies of accumulation on a world scale. Against proposals for global forms of social democracy, he insisted that a softer and less extractive form of inclusion within a global capitalist system still rested on value flows from the periphery to the core (Ahmed 1981, 37–47). Thus, for Amin, delinking was a necessary response to how the law of value and accumulation on a world scale created core and peripheries. Amin listed five conditions of autocentric accumulation, which occurred in the core: (1) the reproduction of the labour force, meaning agricultural development that produces surplus foodstuffs, and, as time proceeds, enough wage-goods for the proletariat; (2) surplus centralisation, which meant political institutions buffered from the pressures of transnational capital flows, and thus having national capacity to channel investment; (3) control over a market largely reserved for local production, and ensuring some competitiveness of local goods on foreign markets; (4) formal ownership and freedom of choice as to whether to use or not use natural resources; and (5) local control over technology. Autocentric was not an analogue for autarkic, nor did it imply socialism. Instead, it meant relations with other markets, and producers were subordinated to the domestic social formation's needs and the 'logic of internal accumulation' – a logic that went beyond the summing of capital to the socio-political regulation of the entire accumulation process, and a logic absent in the periphery (Amin 1990b, 11).

Peripheries were partially defined negatively, in respect to what they lacked: a local bourgeoisie and local state control over accumulation. What furthermore marks peripheries and cores is the relationship that superintends accumulation. In the core, mass consumption industries go alongside a capital goods sector. A portion of productivity increases becomes increased working-class consumption. However, in the periphery, exports go alongside luxury consumption and limited internal markets. This is the case because uneven accumulation rests on unequal exchange via price compression. Price compression rests on suppression of labour costs. Low labour costs mean limited buying power, and therefore a limited internal market (Amin 1974c).⁷

As Amin argues, in the Bandung states, until industrialisation began to accelerate in the period bookended roughly by the years 1955–1980, the periphery's agrarian bourgeoisie were adjuncts to core accumulation. In the post-colonial period, the middle class became more central to peripheral accumulation, becoming the basis of import-substitution industrialisation and an enlarged internal market. But widespread social democracy and a wider mass internal market were absent (Amin 1990b, 10–13). Peripheries remained articulated to the core, not merely in terms of production-consumption circuits, or in terms of tropical exports, but furthermore in terms of technology that either mimicked or was directly imported from the core, ensuring continued value outflows – the essence of the dependency relationship (Dussel 1988, 312–361).

Amin pointed out two key political aspects of the Bandung projects. First, they envisioned the dependent bourgeoisie steering an internationally oriented course to internally articulated capitalist development – a path few seemed able to follow. Second,

beyond the natural unsettledness of the sea of economic development, the gales of US violence buffeted such states as soon as they set out. In the face of such storms, the peripheral bourgeoisie mostly accepted ‘compradorization’ (Amin 1990b, 17; Kadri 2016).

Delinking: abstracting from China

Amin proposed ‘delinking’ to break the world-systemic chains binding such states to the core. Delinking was not autarky, but a condition for ‘autocentric’ peripheral development. Delinking was a political choice to change who made domestic decisions and how. It was to break with the rationality in which domestic policy choices were made with an eye towards what the capitalist global market valued. In its place, an internal ‘popular alliance’ would impose constraints and make choices according to its *own* law of value – based on the interests of workers and peasants (Amin 1990b, 18–19).⁸ Because the capitalist law of value used relative prices as mechanisms of value extraction and to guide decision-making, breaking with them was needed to lock in value.

Such an alliance could set in motion a positive programme resting on three pillars. One was to renounce world ‘capitalist rationality’, and subject all external relations to internal choices and values. The second was the political capacity to introduce reforms in an egalitarian direction. Such a capacity also lay at delinking’s genesis, since the domestic bourgeoisie were perfectly happy with the status quo. And the third was a capacity for ‘technological absorption and ingenuity’ (Amin 1990b, 60). Amin made this model by abstracting from the worker–peasant alliance of Maoist China. Valuation of output of production would reflect labour inputs. Wages and prices would be calibrated to ensure that urban and rural workers – industrial and agricultural producers – could lay claim to shares of the social output equal to their labour inputs. One can understand quantitatively what the distinctions between a popular model and the dependent-capitalist model mean when one considers that in the latter, one hour of agricultural labour in the periphery produces one-tenth of the value added in price terms of what the same hour produces in the core. In the industrial sector, three hours of labour in the periphery produce the same value added as one hour in the core (Amin 1990b, 60–64).⁹ If wages and prices were to have been consistent with those in the core, there would be intensive rural–urban migration as surplus was concentrated amongst industrial sectors. However, in the delinking model, returns to labour are constant. That is so even if agricultural productivity increases at merely 2%, per year whereas urban productivity increases at 3% per year. Thus, wages and prices need to be constantly readjusted to ensure that increased output does not lead to a rural–urban income differential.¹⁰ Amin saw the urban intermediate goods sector feeding the productivity of the rural sector, which would literally feed the urban sector. Virtuous circles would ensue.

This inter-sectoral and cross-spatial exchange was based on a specific technological package – according to the model, increasingly but not solely capital-intensive and thus input-dependent industrialised agriculture. Amin abstracted from a history of an agriculture that used capital inputs and traditional technologies. He had seen clearly that the latter had been absolutely central to early Maoist development, and so built them into his modelling. Thus, he argued for an opening to ‘renovation and improvement of traditional technologies’ alongside selective use of imported ones (Amin 1990b, 64–67). This was unmistakably a nod to the technological *mélange* of Maoist

China, where pig fertiliser, night soil and green manures went alongside chemical fertilisers and large and small tractors filling the fields (Schmalzer 2016, 102–109, 116–119).

Amin, understandably, did not place such technics under intense scrutiny. He did not explicitly reckon with the extent to which each helped boost the vitality of Chinese agriculture, or with their long-run effects. Amin was a polymath, but he could not know everything. In particular, it seems he may have over-estimated the contribution, or at least the necessity, of external inputs to agricultural productivity increases, in China and more broadly. Indeed, chemical fertilisers were practically irrelevant to early yield increases (Aziz 1978). China's much-ballyhooed mechanisation, too, was not mimetic. Small locally produced and even human-powered tractors were a major element of Chinese technology. Finally, the delayed returns from human labour invested in irrigation works were a major element in post-Mao agricultural productivity increases (Kueh 2006). While chemical fertiliser did play a role in yield increases, there is no reason to automatically build them into an after-the-fact model for future popular development efforts, particularly since there is evidence that post-Mao agricultural intensification has damaged soil and water (Zhang et al. 2015).

By not merely aggregating all agricultural technologies and their output effects, we can think of technological choice and its relationship to the ecology as part of the delinking strategy, not reducible to the question of national control over technology. They involve a series of short-term and long-term trade-offs between productivity, eco-system and human health, and biospheric and socio-ecological resilience. By giving more consideration to 'traditional' technologies, we may think of the popular law of value not merely in productivist terms, but as rooted in a holistic production of use values – including, of course, the ultimate use value: the ecology within which agriculture rests. Such a move allows for a rupture with the capitalist law of value, breaking with its technology and breaking with its epistemology, and truly taking local knowledges as the base for a new development from below, appropriately informed by modern science, but as a method of investigation and experiment rather than one necessarily bound to the specific capitalist technologies with which it is often bundled.

Samir Amin's world-ecology

Amin's precocious political ecology emerged in his earliest individual and collective work. At least as early as 1971, Amin was at meetings with luminaries of global development, and helped produce a major Third World document that affirmed the ecological issue's urgency, but also stated that it ought not to be used to bludgeon into silence those insisting on the right of the periphery to develop. In this, they insisted that the ecological problem was political rather than merely technical – reflecting a prioritisation of relations of production over forces of production (ILPES 1971; Estenssoro and Valdés 2014). His analysis of accumulation showed an awareness of the ecological consequences of agricultural modernisation and of capitalism. Building from work on how the structure of prices prevented the protection of Senegal's soil from the consequences of monoculture peanut farming (Amin 1974a), Amin realised that the world price structure meant some regions would experience a relatively heavier burden of waste than others: uneven waste accumulation as the other side of the coin of uneven value accumulation (Amin 1977, 26, 137–143). He furthermore argued that

defending the environment meant abandoning capitalism and its metrics of valuation (Amin 1992), an argument for which he later found proof in the notion of the ecological footprint (Amin 2009).

However, Amin retained to the end of his life an analytical and political tension, a tension that reflected the tensions of socialist construction. He knew capitalism was not compatible with the long-run protection of the ecology. He had prefigured certain ideas of ecologically uneven exchange. He understood that pre-capitalist agricultures rested on certain equilibria between forestry and grazing and farming. He saw that monocultures were inherently damaging (Seck 1994). And he defended food sovereignty as the foundation of political sovereignty (Amin 2015). On the one hand, he did not reject the technologies through which capitalism had reshaped southern agricultures, retaining some openness to ambiguously defined ‘progress’ in technology (Amin 2003). He retained a productivist bias in his analysis of smallholder farming. He seemed to sometimes see agriculture as a factory in the field, albeit one with lower productivity than the factories in the cities. And he seemed to think that chemical inputs into farming could ensure perpetual productivity.¹¹ On the other hand, it seems clear that this stemmed from his awareness that peripheral social formations might have to secure hard currency by hook, by crook or through chemical fertiliser applied to produce export crops, in order to industrialise, which was in turn a means of national defence. In this he went beyond some notions of food sovereignty that do not give sufficient attention to the national contradiction. He saw clearly that posing the ecological question (or that of food) without giving the national question its due would lead to what I would call neo-colonial ecologism or reducing politics to ecology.

Furthermore, at the time of Amin’s earlier work on delinking, he could not have known that agro-ecology would soon articulate the principles that animated parts of the East Asian experience, or that society-wide experiments would prove the productivity and sustainability of infinitely renewable technics. But later on, this information was circulating in far wider intellectual and political circles, and it was increasingly known that the Cuban experience showed that even on productivist criteria, agro-ecology could outperform conventional agriculture in the Third World (Rosset et al. 2011, 179–183). More experimentally, recent work on the system of crop intensification suggests inputs are not the determining factor for maximising yields (Adhikari et al. 2018).

Others, however, who worked within the same framework studied ecological and metabolic issues related to farming and industry much more deeply, offering insights into how agro-ecology, ‘traditional’ farming systems, and delinking offer a solution for Third World development. We can view them as anticipating the results of modern agro-ecology. And while they contrast with the letter of Amin’s programme, they offer a strong boost to its spirit, in situating agro-ecological production methods within a dependency framework that foregrounds the national question. They merit consideration in terms of developing delinking and auto-centred projects not merely as dazzling artifacts of intellectual history but as breathing theories of development, pointing to a different future. To that end, I now turn to the intellectual labour of others in that space, focusing on farming and sustainable manufacturing.

Egyptian insight into ecologically sustainable farming

At nearly the same moment when Amin was formalising his model, other Arab dependency theorists were digging into the horizons of traditional farming systems in the North African-Arab arena. They had surely had access to Amin's early texts, stored at the African Institute for Economic Development and Planning (IDEP) in Dakar, where he theorised a relationship between colonial and neo-colonial monocrops and soil degradation, although we cannot say whether Amin was an inspiration for his colleagues' rich insights into agricultural systems. What we can say with more confidence is that there was certainly a milieu in Dakar in the early to mid 1970s where, in partnership with Amin, there was an intense interest in 'traditional' technologies, as the basis for a very different pattern of development (Ismail Sabri-Abdallah was a central figure in these intellectual shifts). A waxing ecological consciousness coincided with penetrating insight into how technology transfer abetted peripheralisation by promoting unemployment on the one hand and capital drain on the other. There was, furthermore, an increasing awareness of the alternative to industrial-heavy paths, an alternative that took shape in China amidst the Cultural Revolution.

The economist Fawzy Mansour was one of these figures.¹² At one time he was a professor at the University of Cairo. He was later jailed for five years. After his release, he was cajoled into offering his insights into Nasserist planning. Still later he became a colleague of Amin at IDEP.

Mansour did some of the most prescient work in fusing dependency economics with the accreted genius of sustainable farming. Paralleling but going beyond Amin's insights into the capacity of traditional farming systems to husband soil fertility, Mansour analysed the merits of traditional farming systems. Their priorities had been, first, feeding farm families and communities, and then sustainability. They reflected the homeostatic nature of pre-capitalist political ecologies and the place-based knowledges that were part of how people, especially peasants, made and remade such ecologies. As he put it, 'the techniques evolved elicited from nature its self-regenerating powers rather than destroyed' them (Mansour 1980, 24). Even the large irrigation networks of antiquity were based on 'intricate, highly technical systems of land service and land utilization, evolved by peasants through centuries of practical experience' (24). Such techniques were not the fruit of modern laboratories. They were not necessarily intensive nor highly productive. For Mansour, their merit was different: they worked, and they kept working. They preserved the land-base and its resources, ensured sealed metabolisms, and exhibited considerable technical sophistication and tacit knowledge.

Although such systems were ecologically sound and more or less sealed metabolically, Mansour did not idealise them, nor did he cast them as a prelapsarian Arcadia. In fact, they required 'an inordinate amount of physical hard labor' (Mansour 1980, 25). Nevertheless, they had three important traits. First, 'whenever catastrophes and pronounced imbalances occurred, they were usually due to factors *extraneous to the agricultural systems themselves*'; second, 'Except in very special circumstances, *these systems contained in-built mechanisms for restoring their own viability*'; and, third, '*They also contained in-built technical and social mechanisms for moderating the disruptive effects of natural calamities*' (26, original emphasis). Mansour drew on local examples – Egypt especially – but noted how terracing and irrigation in China, too, exemplified the

ecological endurance of such systems. These were techniques built into social systems that were unthinkable without them and without which the techniques could not be permanently preserved (Sharma 2017). In this case, they were so strong because there was no 'divorce' between production and consumption (Mansour 1980, 28). They had to be as strong as they were, because there were no other options. If a harvest failed, people could go hungry.

Such techniques were the physical evidence of accumulated grounded knowledge of building up production in a given socio-ecological milieu. Such techniques were also local. They were an epistemic break with the notion of an abstract knowledge, made corporate in a 'universal' agriculture that embodied that abstract knowledge, heedless of consequences, blind to place. Nor were his examples innocent: one was a concrete example of sustainable agricultural development in the Arab lands he knew best. The other was not merely a gesture towards the legacy of Chinese sustainable agronomy, but also surely reflected his awareness that such techniques had endured and even been deepened throughout the Maoist period. Although Mansour's critique was primarily negative, there is certainly the implication that such techniques offered the possibility of a different modernity. If scaled up, they offered the potential for productivity increases, surplus creation and more value remaining within the national sphere. They sharply broke from the productivist orientation that dominated in the 1960s amongst the Bandung states, and began to imagine reorienting production while being attentive to the technological inheritance from the past and what it might offer to future ecologically sound and decentralised development programmes.

Elsewhere, Mansour drew out what such a focus could mean as it was interwoven into a plan for auto-centred development. Sovereignty, technology and knowledge were assembled into a tripod holding up the possibility of the future. Each leg was meant to make possible an exit from the morass of underdevelopment, marked by colonial or neo-colonial lack of sovereignty, technological dependence and epistemological subservience to the core (Mahjoub 1982). In each, we may see analogues of Amin's plan for delinking. Sovereignty means placing external relations under internal control, and national control over technology and knowledge production exemplified the capacity for technological innovation.

The first step towards the crafting of an appropriate technology was national control over the means of production. Appropriate did not mean, as today's anti-Luddites would have it, reducing the poor of the periphery to playing with sticks and stones, and did not mean accepting underdevelopment as a 'given'.¹³ Luddism was a rebellion against an onrushing future (Sale 1996). Similarly, appropriate meant suitable for a certain site, a certain country, certain lands, particular 'national factor endowments' as well as the 'mode of life' (Mansour 1979, 232). Through political engineering of production, what Mansour elsewhere baptised a second wave of national liberation (1999), he thought to ward off a sorcerers' apprentice effect, which would lead to an avalanche of foreign debt through the 'outward drain of surpluses' (Mansour 1979, 232). He knew well that outward-oriented agricultures had been part of the problem, creating a socio-ecological disaster, 'undermining ... on a global scale, the natural eco-systems on which agriculture should be based' (Mansour 1980, 31). In describing the problem and gesturing towards a solution, Mansour carried forward the fusion of economics with ecology, showing how capitalist agricultures' cutting apart of traditional farming systems was inseparable from

vampiric extraction of the life-blood of value from national circulatory systems. In this way he advanced on Amin's ambivalence regarding 'modern' agricultural technologies, clarifying that liberated nations had to renounce such newness and turn to the past to protect the future.

Mansour had precisely anatomised traditional farming systems, giving us a taste of some of the best of Arab *dependista* insight into traditional farming. His fellow Egyptian economist Mohamed Dowidar, who was at meetings with Amin in the early 1970s in Sweden and Nairobi, was also a key collaborator in Dakar. Dowidar pushed ahead with advancing how industry had to be reformed in a way that would deepen national control over production, preventing technology or knowledge from being conduits for value outflow. In so doing, he offered a careful and ecologically conscientious programmatic statement of the difference between industry and agriculture, alongside a holistic ecological understanding of auto-centred development. He wished to reshape industry along ecological lines. Instead of 'exhaustible, non-reproducible resources', he called for replacing them with non-exhaustible and reproducible 'substitutes' (Dowidar 1984, 315). He called for industrialisation focused on the primary processing of biotic as opposed to abiotic resources, or living and renewable versus dead and non-renewable material: working with wood when possible instead of metal, for example. He implicitly gestured towards the difference between industry and manufacturing (Duncan 1996, 29, 195–196). He also saw that technological ingenuity had to be nested in an appropriate social roost. The 'national labour force [had to] recover ... a technological milieu, one within which it can not only assimilate but also create new techniques' (Dowidar 1984, 316). Recovery was not a question of mimicking the modernity that the colonial and neo-colonial order had decided was suitable for the South. It was based on a recognition that those forces had set in place unsuitable technological paradigms. Thus, Dowidar went on to call for

the development of local techniques on the basis of effecting the appropriate selection of these techniques. Such a policy should aim at the development of local techniques on the basis of a historical study of the process of their social selection (which will be related, by definition, to the environment) in order to see whether they can be used as they are, with modification or have to be further developed. (Dowidar 1984, 317)

It is well known that oil has enabled a temporary uniformity, a smoothing of production, a world of clone-like farms and factories, indifferent to place (Malm 2016). Dowidar proposed a radical departure from such fancies – in fact, farces, since indifference to place on a global scale has damaged the ecology on a literally apocalyptic scale. Historical study linked to social selection could only occur if researchers were willing to take a properly ecological ethic to technological development and were willing to understand why social formations might have developed certain technologies in certain ways at certain times. The environment was neither destiny nor millstone. It was simply unavoidably there. Dowidar, like Amin and Mansour, drew on the Chinese example and its openness to learning and links with the international sphere, but on its own terms: a mix of technological transfer and local innovation, not the former at the expense of the latter (1979). Finally, space entered Dowidar's diagrams for auto-centred development. Space was not merely 'geographical distance measured by transport cost', Euclidean and empty, a flattening of particularity that would also have an elective affinity with comparative

advantage and a global law of value blind to ecological consequences. Instead, Dowidar thought space should be ecological, a question of the ‘geographical distribution of socio-economic relations on the basis of natural endowments’ (1984, 318). For him, different places could best produce different things and would in turn develop different technologies, including for agriculture, on that basis. He also advocated maximising self-reliance at the local level and thought in terms of siting manufacturing in rural areas, rather than concentrating the population in cities. Again, China, with its history of rural industrialisation and emphasis on rural–urban balances, illuminated the path forward, and for him was a model for a decent society (312–313). However, it was in Tunisia that this artisanal interweaving of dependency and ecology took on its most sophisticated form, in the work of the Tunisian agronomists and the economists who were their partners, those I call the Tunisian School (Ajl 2018).

Tunisia’s ecological dependency turn

Tunisian dependency’s ecological turn occurred in its most scintillating form in the state agricultural research institutions, maturing alongside theoretical work developed at the University of Tunis under the leadership of Azzam Mahjoub, a professor of economics. Such institutions were carapace and cage. They offered protection and resources for wide-ranging experimentation and theorisation. But because they were state institutions and Tunisia was in the twilight of its three-decade experience with developmentalist dictatorship, they could likewise imprison thought behind the bars of the permissible, as opposed to the possible.

I focus on the work of Slaheddine el-Amami, an agronomist who rose to the helm of the Centre de Recherche en Génie Rural by 1977 (Slaheddine el-Amami n.d.). Amami came out of the traditional Tunisian left. He had been a member of the Perspectives student group, which had turned to Maoism in the mid 1960s, and the light of the Chinese examples illuminates his own notions of a Tunisian path to development (Naccache 2009, 66–69; Būqirrah 2012, 239–240). However, the hammer the state brought down on student leftists in the 1960s and 1970s could not but have rung in Amami’s ear. Nor was he safely semi-exiled in Dakar’s Institute for Economic Development and Planning. He worked for the Tunisian state, albeit at its laboratory for research in alternative agronomic techniques. For that reason, it is clear that he worked within and at the borders of the state’s legitimating discourse. While there, Amami worked with a wide range of collaborators, and mastered a dazzling array of biomes and the technologies needed to manage each. But he did not work alone, and for that reason my intellectual history of his thought necessarily concerns his collaborators and peers within the research institutions.

Because of political constraints, Amami adopted a superficially more technicist approach to rural development. Unlike Amin’s praise of the Maoist peasant path based on land-to-the-tiller agrarian reforms, Amami focused on technological planning, ingenuity, resurrection of the quiet unheralded genius of past farming, and redirection of state spending and research. If he could not call for a social revolution by taking from the wealthy to give to the needy, he could suggest where the state might funnel its energies and thus feed the needy in place of fattening the affluent. Amami was able to cleverly fit his thought into the state logic with the ideological shoehorn of productivity – the core

faith of state management (Ajl 2019c, 275, 281, 377, 379). He was severely critical of the neo-colonial pattern of state agricultural planning. Everywhere he looked, he saw dependency, value hemorrhage, a country and countryside collapsing amidst the loss of that which kept it alive. Despite the promise of the Green Revolution, cereal imports were ever rising, and so were the clattering machineries of the Green Revolution technical package: tractors, fertilisers, pesticides, herbicides. Poor rotations, borrowed from colonial patterns, prevailed, leaching value from the land and replacing it with pricey inputs. The land lost its capacity to produce future wealth, and the country lost exchange value. Animals ate imported feed, breaking apart the country's pastoral ecology wherein animal meat production was a closed cycle. The more animals were concentrated and fed off-farm or off-pasture, the less their waste could return to the land. In this way, technology was the weapon deployed by capital to extract surplus value at the expense of land and life (Dumont 1971).

Amami was not blind to how property enchained the forces of production. He was an advocate of a peasant Prometheism based on the endless inventiveness of the ancestral makers and feeders of Tunisia.¹⁴ He saw social structure, the state and the ideology of modernisation as the trident impaling the Tunisian countryside (El-Amami 1985). The state was where the ideas of modernisation crystallised in a set of policies and orientations to technology and research, but was also, in his eyes, a battleground. In one of Amami's manifestos, and one that appeared in various forms throughout his oeuvre, he focused on how the structure of national research was linked to dependency. He showed, in sector after sector, how Tunisian agronomists spurned the flora and fauna that were the biological bequest of hundreds or thousands of years of selecting, culling, breeding. Such practices had produced the appropriate plantings and animals for semi-arid Tunisia. Amami eviscerated the engineering faculty's disdain for the 'traditional' and, more importantly, the technologies to which the term gestured. They looked down on the accumulated technological basis of Tunisian farming. Modernisation ideology became a Procrustean bed determining Tunisian technological choices. It was 'a colonial ideology favoring the supremacy of imported technology and wanting to disown any specificity to the colonized country' (El-Amami 1982, 15). Seeds, the basis of Tunisian production, had become channels for value to gush from the Tunisian national circulatory system, to merchants and monopolistic 'large foreign conglomerates' (16). Even internal institutions, supposedly incubating the appropriate seedstock for Tunisia, had become 'a gigantic technological relay between the exterior and the interior' as they devoted their time to Green Revolution wheats (16). They did not, at that time, study barley, even though it was a crop 'adapted to aridity and one which covered half the Northern cereal lands and almost all the seeded lands of the Center-South' (16).¹⁵ Furthermore, the state did not encourage research into those plants and animals that had been pillars of pre-colonial agriculture. Thus, 'A zoologist who might be interested in the pasturing of camels will be ridiculed. The growing of cactus is paralyzed by this prejudice that it is a symbol of under-development. A tree as noble as the date-palm is totally ignored' (16).

In this way, Amami identified technological paths as bound to what Amin would later identify as the search for local control over technological choices as necessary for internally articulated development. And because such animals and plants were bound to a place and an ecology, auto-centred technological development in the agricultural sector rested

on the ingenuity of traditional farming systems. In this way, technology and knowledge systems were the bases for – in equal measure – accumulation from below, a widened internal market, stanching the bleeding-out of value and setting in motion a development programme based on technologies pre-selected to protect rather than pummel the ecology.

The dependency approach is also clear in another essay that Amami authored with his colleague at the Centre de Recherche en Genie Rural, Akissa Bahri, a specialist in water issues (El-Amami and Bahri 1980). They analysed how technological choices made poor use of Tunisia's own natural endowments and led to or would lead to value outflows from the country. They focused on the use of fossil energy in Tunisian agriculture. In their accounting, modernisation meant mimicking the West's deployment of petroleum in farming – reaching one ton per hectare. Such use would entirely exhaust the country's petroleum resources and still only equal half those of the Western countries – a poor copy, indeed. In its place, they suggested a

conception totally in a rupture with the conventional one, to elaborate technologies rehabilitating local practices and improving them, and which, because of 'their very decentralized character', could better partake of extremely diffuse sources of energy of the arid and semi-arid regions – biomass, sun, wind, etc. (El-Amami and Bahri 1980, 9)

In this way, power sources, farming technologies, traditional farming systems, decentralisation, ecology and social structure fuse in a conception of an alternative modernity at odds with the prevailing model. Technological development would build from existing strengths. Furthermore, they would be oriented to Tunisia's abundant but scattered forms of energy – sunlight and wind and biomass, all drawing from energy related to the sun, rather than the dense forms of energy embodied in petroleum, whose use mines the past of the sun at the price of the future of the earth. Again, using such resources would better allow for Tunisia to manage its relations with the outside world, making them a matter of strategic choice rather than desperation and necessity.

Another arena for technological-epistemological breaks with the dominant law of value is apparent in Amami's penchant for water-harvesting technologies, and his sharp criticism of the technologies the state had selected. With J.-P. Gachet and Taher Gallali, he wrote how the state drenched the countryside through colossal mega-dams, massive fixed-capital investments tied through tubing and the rest of the paraphernalia of modernisation-irrigation to specially crafted irrigated plots (El-Amami, Gachet, and Gallali 1979). He also brought his experimental eye and deft theoretical touch to water delivery and gathering rainwater to increase the supply for human use. He knew a lack of water could hinder Tunisian farming, and wished for it to fit into the water cycle so as to maximise individual and national well-being. The country was home to a dazzling array of techniques for using rainwater, based on expected annual rainfall, roughly indicated by isohyets, or bands indicating average annual rainfall: for example, 100 millimetres, 200 millimetres, and so on. He knew that previous democratic polytechnics were based on local knowledge: how to physically engineer the water works, the knowledge that made hardscrabble montane contours legible to the human eye, and that could estimate how the stone of slopes could channel water from catchment to farm. Such systems shared a number of central characteristics. First was

complete technological expertise based on local know-how and materials and ... relative independence of the central authorities. Thus, the users themselves were entirely responsible for these water systems – an extremely important point in view of the fact that the new approach represents a break with this practice. The basic principle of this traditional water management is an interaction or direct relationship between the use of groundwater and that of surface water. How surface water is used determined the use made of groundwater ... Hillside waterworks help to recharge the water table, which is then drawn on by downstream catchment. The settlement of mountain areas on the basis of traditional water systems is a necessary condition to the hydrology of the lowlands and provides a hydrological foundation to traditional installations water systems. (El-Amami 1983, 58–59)

Here we find, once again, a creative and grounded application of the idea of auto-centred development to a distinct technological system. It was based on the most democratic distribution of technology and knowledge. It was also clear that this democracy was inseparable from an ecological balancing act between groundwater and surface water. Amami saw human-made technology was an interface conditioned not merely by the local ecology in a ‘broad’ sense but at the level of the watershed, wherein the techniques recharged and did not mine the water table. As he went on to write, in Kairouan in central Tunisia, a landscape of flood zones and small dams could have been ‘consolidated and improved’ by deploying abundant labour – a constant in late-colonial and post-colonial Tunisia (El-Amami 1983, 62). That could have occurred using local materials and without bringing in foreign technical attachés to engineer mammoth dams. It would have strengthened the decentralisation of the water system and worked towards ‘a regional balance that would foster the creation of employment, stemming rural depopulation and water erosion’ (62). Technology was not merely the interface between humans and the ecology, but a physical intermediary between socio-political goals and human beings. With the right technics (which would have required the right amount of social power to force the issue) the Tunisian government could have solved employment crises, widened the internal market, and avoided some of the rural–urban migration that in turn created seemingly unresolvable infrastructural and employment problems in the cities and eventually mass migration to France. It could also have tended to the ecology. Instead, the government created a massive and inefficient dam at a massive and unsupportable price. Rather than solving social ills, it exacerbated them. As he noted, ‘This concept of centralized development ... results in an inhuman, eroded agricultural region and community dependence on a “technostructure” born of the need to “manage” these major works’ (62–63).

The older systems rested on mostly un-systematised but clearly harmonised knowledge of micro-basins and micro-watersheds. However, as Amami elsewhere observed, in the context of applied experiments, existing research (c.1977) was overall quite scarce concerning hydrological mechanisms at the level of micro-watersheds. It was basically non-existent at the level of individual *jessour* or *meskats* – a water-collection technology that channelled run-off water from a specific catchment, the impluvium, through gullies that would striate it, and pass the water on to individual olive trees in semi-arid zones. These were the technologies most suited to a capital-scarce semi-arid and arid country. Without precisely knowing the hydrology of micro-watersheds, it is impossible to assess whether and where to build indigenous waterworks. Amami discussed pilot projects in the Sahel of Tunisia in the context of testing these small-scale technologies. The

point of departure was one of metabolic healing and agricultural intensification, to create a larger surplus. Rainwater, much like solar energy, required technology in order to concentrate it in certain areas and make it suitable for human use. The indigenous waterworks of the region were the only option, in his eyes, for stopping erosion and recharging plunging groundwater reservoirs. The capacities of rainwater harvesting turned on the hydrological dynamics of micro-watersheds, which Tunisian scientists had only spottily studied (El-Amami 1977, 1–2).

He analysed several experiments in using run-off water in Shott Mariem, an agricultural research centre near Sousse, south of Tunis. He noted several factors that led to their failure, and that contributed more broadly to the lack of studies of the dynamics of actual micro-watersheds, the appropriate scale for assessing the impact and suitability of dispersed and smaller hydraulic systems. The first, he observed, was that the work was ‘heavy’ to conduct. It required a local infrastructure for experimentation and monitoring. The intellectual and material centralisation of the country’s research establishments placed an obstacle in front of anyone who might wish to carry out local experiments. The second reason was, in essence, the other side of the coin of the first. The decision to build grand hydraulics had ‘engaged and polarized all energies towards work on major watersheds generally located in the North, thereby discrediting any intellectual efforts invested in small and “insignificant” hydraulic installations’ (*Ibid.*, 2). Offices linked to the large public sector had played a role in orienting research and interest towards large hydraulic installations. But without the appropriate investigations, is it difficult to know, for example, how to build economic input–output models that could even theoretically examine the profitability of using surface waters for irrigation. He commented on the need to find data on precipitation and hydrology in micro-basins in order to establish when and where people should place *meskats*. What Amami saw was that specific technological forms were woven into Tunisian agricultural capitalism, its tendency towards centralised and dependent research, and the national rejection of the indigenous and ecologically appropriate technologies that indicated a path to an entirely different development pattern.

Amami saw that development had to be based on devolving power, not merely through political institutions, but through the physical apparatus of production itself. In this way, they could also devolve power to the peasants in ways counter to the dependency-inducing patterns in Tunisia. This meant a radically different approach to nature, and a very different orientation to the skills and lives of the smallholders. In another essay, written with Gachet, Amami urged the use of tools ‘that nature put in our hands’, which would require a battalion of scientists to understand those tools and how to improve them (Gachet and El-Amami 1978, 12). They called for a

regional agricultural plan, decentralized and depending primarily on the mobilization of the creative will of peasants capable of ‘moving mountains’ and of defeating difficulties of all genres and of living with droughts in order to limit the havoc [which] could in this manner constitute a real tool of development in the rural world. (13)

Their vision of development under conditions of dependency prefigured resilience approaches to ecological management, anticipating latter-day agro-ecological social science proving that such farms spring back much faster from storms than do those under conventional agriculture (Altieri and Nicholls 2017). Of course, it was also

plainly based on placing at centre stage the peasant herself, as subject and not object of developmental plans, and while clearly not a participant in the political sense in Tunisian policymaking – quite impossible under developmental dictatorship – a participant instead in making, remaking and improving the lives of the poorest with state assistance. It was not to be, but the affinities with the Maoist model are plain even if tacit: local self-reliance, maximising the use of local labour, and in that way democratising consumption, all in the framework of a national-popular project oriented to a better future.

Conclusion

Amin's delinking was the broadest example of a plan that did not merely criticise but sought to break from dependency. His ideas travelled farthest and had the widest currency. Fundamentally, his idea of development and his extolling of the Chinese path was based on empowering peasants and workers, as Maoism had done in practice. China inspired many such dreams at that moment, in the region and beyond. Amin excelled as a writer on development, but he did not delve into the minutiae of peasant technologies or traditional farming systems. And while he slowly modified his earlier ideas that technology was an 'independent variable', and later saw that technology and research 'follow a direction that accords with the requirements of the system', and called for '*modern*' techniques adapted to the problems of the periphery, then – and, more to the point, in the near past – there had been and remains an ambivalence about the capacities of agro-ecology or sustainable farming to sustainably feed the world (Amin 1974b, 595–596).

Amin's partial embrace of the modernisation of the agricultural sector was not an a priori principle, plucked from the toolkit of modernisation theory. He thought he had seen it work in China, which had freed the land, continuously increased agricultural productivity, fed its people rice and assured them medical care, and exorcised the spectre of poverty, all in a single generation. Perhaps taken in by Mao's enthrallment with tractors, Amin would have been unlikely to know how much self-reliance in Chinese fields was elevated to the level of economic creed, including pushing local agricultural experimentation to an extremely advanced level, in ways that once again anticipated agro-ecological approaches to rural development (Shih-chang 1972; Schmalzer 2014).¹⁶ And because he did not devote his energy to economic ethnography or field surveys of peasant farming, he could not see ahead to any kind of peasant Prometheanism or its capacity to be the basis of a radical break with the technical package of capitalist agriculture – although later on, his embrace of 'modern' farming technologies, while certainly equivocal, merits criticism. Finally, his ecological consciousness developed in a milieu wherein ecology was being depoliticised and treated merely as a technical question, and where Latin American, Arab, African and Asian development experts worried that their right to development and to improve their peoples' lives was under threat from a First World environmentalism that trafficked in Malthusian appeals and denial of the need for development in the periphery. Perhaps this accounts for Amin's bending the stick in the other direction at certain junctures when it comes to ecological stewardship of the Third World and its possible conflicts with popular development.

Amin's star shone brightest amongst the many Arab economists and agronomists working in the vein of dependency theory. But his was one star amongst many.

Turning their eye somewhat more closely to questions of technological development, Dowidar and Mansour sketched programmatic and practical paths for peasant-based or local manufacturing-based delinking. Like Amin, they drew on the Chinese example. They saw it was not merely abstract power that had to be devolved. Rather, restoring the creativity of the people had to rest on a William Morris-style cherishing of the people as frustrated producers, pregnant with a blocked genius. They also started to undermine the wall between intellectual and manual labour. Meanwhile, Amami was in a class of his own vis-à-vis the move towards a fully ‘modern’ technology that fit farming smoothly into ecological cycles. The research of all three meshed neatly, whether implicitly or explicitly, with dependency.

Furthermore, each of them brings a further contribution and further strengths to the idea of national projects for the periphery – a constant concern of Amin, and one based on his notion that development-through-integration was impossible. Indeed, as he witnessed, increasingly such projects needed to place front and centre a united southern front against the imperialist scourge that was laying waste to one Arab state after another (Amin and Bush 2014). At the dusk of Amin’s life, he engaged with the rising movements for food sovereignty and agro-ecology, which he often saw as following a line of struggle originating in China and Vietnam, highlighting their role in a transition to a different world-system, and insisting on the contemporary relevance of the agrarian question to development trajectories (Amin 2012, 21–24). However, he insisted that such projects needed a clear sense of the class that would be sovereign, rather than simply resting on a loose populism (Amin 2015; Shivji 2019). And he always argued that the national question had to organise internal social, democratic or ecological planning.

In following earlier trajectories from East and Southeast Asia, he continued to place the poor people of the countryside at centre stage as the subject of the path to a non-imperialist and non-capitalist world-system. Such a political sociology and macro framework provide a crucial scaffolding for reinterpreting the flood of information on the developmental possibilities of agro-ecology, its promise for a different and better future for the poor and especially the rural poor of the formerly colonised world, and the need to put the national question front and centre. Justly, such notions are enjoying a contemporary renaissance (Ayeb and Bush 2019). If Amin could not see the entirety of the necessary developmental path, he still illuminated its borders with a brilliant radiance, one unlikely to soon fade. The path’s outlines are marked. What is left is to walk it.

Notes

1. As Amin writes, ‘On the other hand, inasmuch as it contributes to the consolidation of a productive model in which the interests of the privileged classes are determinant, such integration does deform development’ (Amin 1983, 33).
2. Clearly, some states with extremely varying degrees of internal political and social democracy have been able to endure and, in some ways, flourish even amidst severe external assault, and even after the fall of the USSR.
3. Interview with Ali Kadri, 19 June 2019.
4. The literature is huge. See, inter alia, Amin (1983); Fergany (1987); Ajl (2021).
5. See citations later in the essay, as well as Zaki (1987) and Kurzum (1997). The idea of self-reliant development was in circulation earlier as a descriptor for the Chinese model, in the

Democratic People's Republic of Korea and when Julius Nyerere used it in the Arusha Declaration.

6. I am currently researching the intellectual history of the connections between Amin's work in *Accumulation on a world scale*, *The Future of Maoism* and *delinking* and the development of Arab dependency theory, Arab auto-centred development theory and Tunisian radical agronomy. For that reason, I generally do not make explicit statements about the genealogy of ideas. Initial findings, which I draw upon and rework in this essay, are in Ajl 2018 and 2019a.
7. For the most sophisticated statement of the role of super-exploitation in dependency, see Marini (1973).
8. For critique and discussion of the debate, see Samara (2005) and Ajl (2019b).
9. As Cope (2019, 37–87) shows, very often productivity is the same in the core and the periphery.
10. Amin also perhaps understated the extent to which the Chinese experience was based on an ideology of self-reliance at the local level. See, on this, Schmalzer (2016, 141–144).
11. Nor did he write of the opaque human health impacts of such agro-chemicals (Shattuck 2020).
12. For some of the history of Amin's collaborations with Fawzy Mansour, see Amin (2006, 91, 202–203).
13. Luddites has entered the common language to dismiss people who are opposed to new technologies. However, the Luddite movement was a radical organisation of textile workers who demolished new textile machineries because they believed such technology was threatening their livelihoods.
14. On different interpretations of Prometheanism, see Galluzzo (2015).
15. On the modern after-effects of the Green Revolution, the reader can find no better primer than the 2018 documentary *Couscous*, by filmmaker Habib Ayeb.
16. I thank Nils McCune for bringing this work to my attention.

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