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ROUTLEDGE ADVANCES IN MIDDLE EAST AND ISLAMIC STUDIES

Knowledge Production in the Arab World

The impossible promise

Sari Hanafi and
Rigas Arvanitis

ROUTLEDGE

Knowledge Production in the Arab World

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Over recent decades we have witnessed the globalization of research. However, this has yet to translate into a worldwide scientific network across which competencies and resources can flow freely. Arab countries have strived to join this globalized world and become a "knowledge economy," yet little time has been invested in the region's fragmented scientific institutions; institutions that should provide opportunities for individuals to step out on the global stage.

Knowledge Production in the Arab World investigates research practices in the Arab world using multiple case studies from the region, with particular focus on Lebanon and Jordan. It depicts the Janus-like face of Arab research, poised between the negative and the positive and faced with two potentially opposing strands: local relevance alongside its internationalization. The book critically assesses the role and dynamics of research and poses questions that are crucial to furthering our understanding of the very particular case of knowledge production in the Arab region. The book explores research's relevance and whom it serves, as well as the methodological flaws behind academic rankings and the meaning and application of key concepts such as knowledge society/economy.

Providing a detailed and comprehensive examination of knowledge production in the Arab world, this book is of interest to students, scholars and policymakers working on the issues of research practices and status of science in contemporary developing countries.

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Introduction

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> Science is a sort of metaphor for politics, because its ostensible rationality covers up any messy conflicting interests and is also the purest expression of development and modernization.
>
> (Siino 2004: 73)

In June 2014, our university department organized a tribute to Samir Khalaf, who is a professor of sociology at the American University of Beirut (AUB). When we sent this invitation to our mailing list, we received seven phone calls and emails asking us when Samir passed away, and four other emails asking when he retired. This anecdote alludes to the lack of tradition in the Arab world of giving a tribute to someone who is still alive or still has a professional life. It indicates the absence of a "scientific community" in Lebanon that acknowledges the contribution of its members. Of course, traditions are the result of an active re-enactment of our history. Scientific, academic and disciplinary communities are fond of these small rituals that revive the intellectual standing of its members and permit us to gauge our own position as a group within the "community." What is at stake, in any of these informal evaluations, is where we stand, and at the same time to which group we belong. Institutions make some of these boundaries,[1] and an important motive for our book has been to understand the institutionalization process that has taken place in the Arab world, and particularly in Lebanon. We will ask ourselves why it was so late, why the scientists waited so long to create an active scientific community.

In March 2014, the Lebanese Association for the Advancement of Science held its twentieth annual conference. It was an opportunity to present more than 400 posters and presentations in the natural and exact sciences. For a small community, in a small country, these numbers are relatively high; it is not so much a question of the mere size of the scientific community, but rather a question of proportion. The researchers are there, but is there a community? "In this country, you can find a specialist in any specialty, but you will never find two persons in the same domain" was the witty remark of a research director who we interviewed last year. Maybe it appears to be an exaggeration, but certainly it reflects a widely felt reality. This lack of "community" appears so strange in a country

where the notion of community is so present, referring to the religious and social "communities" that are recognized in the political life of the country. And maybe a part of the answer lies, precisely, in the division of the country into its many competing fragments. The particular context of Lebanon is a nuance of a phenomenon evident throughout the Arab world.

The first issue we would like to tackle in this book are the reasons the scientific community is so little recognized in Arab countries, despite them being rich with universities and hospitals, and having some level of scientific production. On some level, we question whether the problem stems from institutions or whether it is a result of political matters, in which Arab countries are comparatively less active than other regions, like Latin America. Is it possible that the problem is grounded in deeper social and political problems that influence the production of scientific knowledge?

1 Identifying the local engines of globalization in research

We were not initially guided by this questioning about the scientific community. Rather, we arrived at this issue, and as we will see it will relate to one of our main conclusions. As we know, since the seminal book of Roland Waast and his colleagues (Gaillard *et al.* 1997a: 12), scientific communities were born in the age of *national science*, after colonial rule withdrew:

> For almost three decades or so after the War, national mode of scientific development promoted the strategies of import-substitution and self-reliance in the overall economic policies, also governed the organization of science and the goal orientations of scientific communities.

But this new era of "national science" has been short-lived: we can date this period from the independence or liberation wars, when the nation states were set-up against colonial rule, until the 1980s, when globalization became the new name of the game.

At that time, until approximately the 1980s, research was essentially equated to science. Nation states were creating new institutions, among them universities and public research centers. The debates on development always mentioned economic growth, and science was just a background activity useful for technological development. All that counted was technology and, for those who recognize the unequal exchanges between developing and rich countries, technological transfers. The endless debates on technological development translated the frustration of those newcomer countries that lacked access to up-to-date technology. This debate, as Ruffier (1991) claimed, was terminated when it was found out, in the process, that technology cannot be bought: it has to be developed, it has to be incorporated locally and mastered in-house, it has to rely on previous knowledge, it has, also, to rely on research. Technological developments do not depend on research exclusively; they relate to the technological experiences of companies, among which R&D and public research are, indeed, vital inputs.

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Since the 1980s, a second fundamental change has taken place: globalization has profoundly affected research. Research is no more an exclusively national endeavor. The divided world in the aftermath of World War II gave rise to a hierarchical world where centers and peripheries are more widely distributed. Scientific collaborations are all about how to link this "national" science (that is, the local scientific community) with the available international competencies, as we will see later.

As a result of this globalization process, science has grown very rapidly. Estimates[2] of the world expenses in R&D show a figure around €1,113 billion, which represents 2.15 percent of estimated world GDP; this figure has grown 77 percent in seven years, from a low of €640 billion in 2000 to today's €1.2 trillion. Over the same period, world GDP grew at a slightly slower pace (72 percent in seven years).

Not only has the scale of science changed in large proportions; its geographic distribution has also changed. The world production, in terms of publications (excluding social and human sciences) is no longer entirely bound to North America and Europe. The geographical distribution is as follows: 38.6 percent of publications come from Europe, followed by North America (28.4 percent) and Asia (24.3 percent). China represents around 11 percent of the world share of publications. New players in world scientific production have appeared since the early years of our new era: China, India, Brazil, Turkey, South Africa. The club of countries that give priority to research has grown, and now includes countries such as Mexico, Thailand and Chile, for instance. Later, we will examine in more depth these important, yet limited, changes.

This increase in the size of science also reflects a larger scope of activity and a stronger interest in the results of research. This was the impetus for the increasing importance of PhD programs created in every country and, as a result, flows of students worldwide have soared. The information and telecommunication technologies created a global information infrastructure, which has triggered further collaborative activities within research networks and for users of scientific knowledge.

The governance and predominance of science in political debates (think of climate change, genetically modified organisms [GMOs], international property rights, negotiations on drugs, biodiversity and the like) has changed. Scientific questions have become global. Scientists of the natural and social realms have become accustomed to thinking about issues at the global level. Of the two scientific fields, this phenomenon possibly occurs more with natural scientists. Objects are global; communities of specialists are global; training specialists has become a question of feeding an international distribution of competences, making every new PhD candidate a future emigrant. Caroline Wagner (2008), among many other authors, has quite brightly defended the idea that international scientific networks are essentially made of individuals who seek collaboration with peers having mutual interests and complementary skills around the world. In this globalized world, international collaboration functions as a global self-organizing system through collective action at the level of researchers themselves (Leydesdorff and Wagner 2008).

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According to this view, in this global era, the individual researcher becomes the hero of international collaborations, by taking decisions where individual interests are the main driver; the basis of this explanation is the idea that the individual recognizes potentially interesting collaborators and is able to evaluate and seize the expected outcomes of the planned collaborations. Leaving aside many flaws[3] in the argument, we believe this view of a sort of gigantic, world-wide network of scientists, in which competences and resources circulate easily, does not correspond to reality. Individual scientists, even the best among the best, need to be able to objectively "choose" their collaborations, a judgment that relates to her/his insertion in their local environment, institutionally, politically and economically. The existence of a local scientific community as well as the institutionalization of scientific activity plays a very important role here. It is through the participation in local training and scientific teams that the young, individual scientist can become increasingly involved in international collaborations and, consequently, be involved in the global scene. This is because, locally, policy instruments have been used to consolidate research activities, doctoral programs and research units, making research a recognized item in policy, budgets and organizations. Personal decisions are important, but choices are also influenced by other factors that go far beyond what we are usually ready to accept when assuming that research (and international scientific collaboration) is beneficial.

We will insist on this aspect, since international collaboration will be an important part of our book. However, for clarity, we want to follow this simple idea that globalization is also a matter of locating the actual places where globalization is based (Sassen 2007). The particular networking that scientists produce through their movements (for training and research), their travels in order to participate in international conferences and meetings, the broad and pervasive movements by the scientific diasporas in foreign countries to study and occupy post-doc positions or work abroad in order to acquire a specialty that will permit a better return home – all these more or less permanent migrations – are in fact dependent upon some local engines of globalization.

Two processes apparently build these engines of globalizations. First, there is an institutionalization process (Vessuri 1994) in which "capacity building" is the first step toward creating research institutions. In most countries where research was not a sizable activity, through a period that can be named "national science," scientific research has been closely linked to universities, instead of national public research organizations. The creation of these particular social institutions goes well beyond the objectives of this book. Nonetheless, the establishment and consolidation of research activities inside the universities has become a crucial aspect of the institutionalization process. The evolution of research, the acceptance of science as a legitimate source of knowledge, is not a mere question of "development": it is a question of political willingness and of its embodiment inside the national institutions. We would like to trigger a discussion, in the Arab world, on these aspects inside the universities, inside the local scientific communities.

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The second process at work is the building of the scientific community – we could add the "national" scientific community – and this process, as explained above, is dependent on the historical momentum, and the resources available based on whether the political system is willing to pay for research. In the case of Lebanon, the apparent lack of a scientific community is also a reflection that is valid for a large majority of countries in the Arab world. As proof, very few, if any, Arab scientists are involved in any of the international scientific debates we have been discussing in these pages.

Since the 1990s, policies have moved away from the import-substitution model to the neoliberal dogma (the "Washington Consensus" and "post-Washington Consensus") that oblige us to think about socio-economic issues only as market issues. The institutionalization process that was slowly taking place was shattered by the lack of resources of public institutions, which directly impacted universities and public research organizations. Thus, science policies also changed.

All these processes (institutionalization, community building and internationalization) were driven by certain ways of understanding the economy and its relation to knowledge. Since the end of the 1990s, the emerging *knowledge economy* became the concept of the day. At the start of the new century, the world appeared increasingly multipolar, with "knowledge" playing many different vital roles. The (once known as) developing countries seemed to have disappeared from the radar within the new knowledge economy. A new concept was needed for what Alice Amsden rightfully called "the Rest," in contrast to "the West" (Amsden 2001). If "developing" is no longer the right word for these economies, what should it be? Have the modes of producing, using and diffusing knowledge changed so much that development itself became an obsolete concept? Are we all living in a "flat world" (Friedman 2005) without borders, where power structures have disappeared? Whether one views globalization as beneficial or harmful, there is a tightly interconnected economic structure with science and technology, as stressed by the Arab Knowledge Report (Al Maktoum Foundation and UNDP 2009).

Multipolarity, indeed, does not indicate the disappearance of hegemony; on the contrary, it is a clear indication that several large centers of research and innovation will exercise hegemony over the field, in a far more aggressive competition than had existed in the divided world of centers and peripheries. If we look at the geographical distribution of the number of articles over time (1978 to 2008), the distribution has not changed for most countries, although absolute numbers have grown immensely. China, Brazil, South Korea and Taiwan are still exceptions (see Figures 2.7–2.10). The next to come seem to be South Africa, Turkey, Thailand, Malaysia, Chile, Argentina, etc. It is not so much a question of more numbers of publications, but rather a changing position that these countries are acquiring. Losego and Arvanitis (2008) have proposed to call the countries that belong neither to the old center nor the new emerging economies as "non-hegemonic countries."

The notion of a non-hegemonic country relates to two essential dimensions: the position of the country in the international division of scientific work, and

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the fact that these countries do not have financial instruments capable of influencing the broader goals of knowledge production, unlike the United States, the European Union and a small number of Asian countries. The research "agenda," as it is usually named, is still set by research groups that belong to a very few large countries, mostly those belonging to the OECD. Knowledge and research seems even more unequally distributed than commercial goods and economic wealth, and strangely enough seems to be very much tied to locational advantages, rather static over time, situated geographically and linked to age-old institutions. This translates into the fact that research policies have been stressing the importance of the public sector, of strong locational advantages – which means rooting the research activities in a specific country because of some advantage you can only find in that specific space. This determination of the research agenda by some very specific places, in some very precise institutions and by some very particular research groups is confirmed by the fact that contrary to our usual thinking (reinforced by the triumphal statements one finds in newspapers), emerging countries have still not been very much able to modify the main flows of investments in R&D (Larédo 2003). Even if growth of scientific production in intermediate urban localities can be observed, rather than a concentration in very large cities (Grossetti *et al.* 2013), the main places of production of scientific research have not changed a lot since the end of World War II. Numerous literature have been written to show the changing ranking of countries and the contribution of research to their wealth. Most, invariably, end up at more or less the same ranking, an issue we will tackle in Chapter 1. This issue of the position of a country within the world circulation of knowledge is probably different for innovation, as opposed to research, since not all innovation is research-based, and since innovation can be more multifaceted than research. Nonetheless, non-hegemonic countries have usually adopted an incremental development model, based on strategies of technological catching up. The experience of the Asian Tigers is precisely one of catching up, learning and adopting technologies, until they become key tools of economic development.

In brief, we need to examine the local roots of globalization, or rather how "globalization" functions locally. The large globalization process of research that we have mentioned above is something rather different from an extension of international activities in research that can be qualified as the "internationalization of research." Rather, we need to identify the changing nature of the research activities in a multipolar world that is not just the outgrowth of a quantitative increase of research. In other words, there is a change of paradigm in the way research is undertaken; it is no more a by-product of extending the research activity into an international arena, adding up more resources (more money, more human resources and also more institutions); rather, it is a definition of the research activity since its very beginning, when research programs are defined from a worldwide point of view rather than a national point of view, which is apparently a paradox; the more globalized activities thus seem to be the more locally rooted. By way of consequence, the more deeply rooted the research activity locally, the more far-reaching it could be. Or, at least this is our claim.

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We titled this book *Knowledge Production in the Arab World: The Impossible Promise* because local activities often reflect global and international activities, as if the later were an impossible target to attain. Research activities are demanding, not solely because of the resources needed for their performance, but also because of their connection to scientific and extra-scientific interests. The mandate to attain a "knowledge economy" is implicitly a mandate to forget about the societal problems and challenges and make the activity visible internationally, no matter the cost. Here, we will shed some light on the status of the research in the Arab world. In the absence of some rooting of the research locally, it can just become the door for more "exits": pure and simple brain-drain, and poor research performance in universities and research centers. Research locally will be, under these conditions, an impossible promise.

2 Knowledge society/economy: the impossible promise

We began this research as a regional project, and Egypt was one of the countries we initially wanted to examine in-depth. "We are not in modernity," was the statement of an Egyptian colleague some four years before the 2011 revolution when talking about research. He was expressing, in this way, the fact that research was absent from any policy consideration. The country had left aside all reflexive work on how and why it should produce scientific knowledge. This commonly made statement was also accompanied by a reproach: "why are Egyptian researchers not taken seriously?" Was it that the country in fact impeded developing research? One can see that is largely not the case, but the research system had come to a halt in these years (Bond *et al.* 2012). An example can be read in the work of Kyriaki Papageorgiou (2007) on the development of biotechnology in Egypt, where she shows political difficulties that impeded the development of European scientific collaboration in Egypt, although US cooperation had forced changes in the legal intellectual property regime more convenient to enterprises. The Mubarak reign left feelings of discomfort among fellow academic colleagues at the University of Cairo. The stress on the university system was enormous: lack of funds, inappropriate structures and bad management. All that made the public research institutions almost paralyzed. Egypt seemed like a showcase of the disastrous situation we mentioned above. While some research fields were finding their way, as we show in the ESTIME project,[4] a revolution happened in the meantime. We cannot but be convinced that some of the dry tinder that fed the revolution can be found among the frustrated academics and students. And, when we began a second project in 2012, based on the same ambition to describe the state of knowledge production, this time in Lebanon and (to lesser extent) Jordan, our aim was to understand the dynamic of research, as we will explain later, and not only its institutional setting.

In recent years, research and analysis on knowledge production and innovation in the Arab region has grown. Probably, this was triggered by the first Arab Human Development Report of the UNDP (UNDP 2004 & 2005), which stressed the need for better education, freedom of thought and more adequate

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jobs in Arab countries. Thus, the production of knowledge was put on the agenda, and joined, not unexpectedly, the interests of enterprises, promoters of a more competitive economy and the World Bank in the promotion of a knowledge economy. Thus, the issue was no longer only that of expanding awareness of the importance of knowledge in society, but that of competitiveness of the Arab economies, through the promotion of a knowledge economy. Research appeared to be one among other "pillars" that needed to be constructed in order to accompany the entry of Arab countries into the knowledge economy. These claims are so broad because they are based on macro-economic assessments, themselves "empirically" founded on broad indicators with little to no understanding of the research dynamic. Essentially, they are grounded on a thin theory of development – a theory that is basically void of political forces, with a vision of a consensual and uniform society, where competition is an individual contest on a single ladder that goes to the top. Rankings and knowledge economy go hand in hand, and the knowledge economy could thus grow under authoritarian regimes that seemed to do quite well on this part. Tunisia had to follow the example of Finland; the Gulf countries were showing the way by growing rapidly in terms of the knowledge economy and the index of competitiveness. Unfortunately, this view is to be found in practically all recent reports on research in the Arab countries. They include a *promise* for development based on a sort of miraculous inclusion into the knowledge economy. But then Nokia fell, and Finland was no longer a good example; the Arab countries had the curious idea to perform revolutions instead of seeking the competitive advantages they were told to pursue. Ben Ali flew to Saudi Arabia, and a long process of reform and revolution (what Asef Bayat calls "refolution") seized the Arab world (we examine the discourse about this fundamental change in Chapter 8). Quite conscious of this extraordinary political change, the World Bank repeated, practically unchanged, this *impossible promise* by publishing the report "Transforming Arab Economies: Travelling the Knowledge and Innovation Road" (Center for Mediterranean Integration 2013). The only thing that changed in this report was its milder tone! Again it is a clear proposition to enter the knowledge economy, and again the real revolution that had occurred just two years before this publication is absent.

Perhaps prematurely, Arab countries – or rather some actors inside the Arab countries, mainly government officials – have wanted to be called "knowledge societies."[5] Every country appears driven by the need to become a "knowledge economy,"[6] a title that became popular since the 1999 World Bank report (1999), and that was actively promoted by the knowledge assessment methodology designed by the World Bank, and specifically targeted to the MENA region (Reiffers and Aubert 2002). Building a knowledge economy became a policy objective alongside, and sometimes in contradiction with, the goal of establishing national innovation systems. The concept of a knowledge economy was formulated by focusing on some aspects of the developed economies that enjoy a dense network of research institutions, a high degree of investment in research and development (R&D) in both public and private institutions and a strong

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infrastructure, known, since the rise of the digital age, as "knowledge infrastructure" (Bowker 2001). This is sufficiently true for the United States and other G8 countries with the importance of what Richard Florida (2014) calls *the rise of a creative class*. Knowledge is about using information, not about mere exchanges of information; it is a practice rather than a possession. Knowledge infrastructures and knowledge circulation would then need to have previously constituted the social and economic conditions that would favor knowledge creation, a task that goes beyond promoting more exchanges of information, or inducing more young people to join creative companies.

Curiously enough, the "knowledge economy" was proposed by the World Bank (1999) on the basis of a comparison of the trends in Asia and Latin America, which was under the direction of a Bank official based in Mexico City. Probably one of the very first authors who wrote about the "knowledge society" was Nico Stehr (1994). He noted that, as a result of the remarkable growth of science and technology in modern society, it had undergone a fundamental shift and become an immediately productive force. Technology was no longer a "cultural" product, but a basic ingredient of any sustainable, long-term economic strategy. The closeness of science and technology that research has uncovered is here to stay, and will run ever deeper in social and political decisions. As many scholars from different regions have shown, a new set of institutional capabilities is deployed everywhere (Valenti *et al.* 2008). Yet, beyond glorifying the word "knowledge," there has been little reflection of these changes in the Arab region (Arvanitis and M'henni 2010).[7]

We could summarize how the knowledge society discourse has been projected in the Arab world as follows: the UN/World Bank ring alarm bells concerning the situation of knowledge production, but at the same time they adopt a methodology and indexes that cannot help the Arab world in how to create knowledge that is useful to their political and socio-economic status. This methodology is based on four pillars of the knowledge economy framework: first, an economic and institutional regime to provide incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship (this is often based on the leaders' opinions); second, an educated and skilled population to create, share, and use knowledge well; third, an efficient innovation system of firms, research centers, universities, consultants and other organizations to tap into the growing stock of global knowledge, assimilate and adapt it to local needs and create new technology; and fourth, information and communication technology (ICT) to facilitate the effective creation, dissemination and processing of information (see Figure I.1).[8]

As Tremblay (2011) reminds us, Arab countries have rarely developed typical knowledge economy industries, such as production or assembly of electronic components, biotechnology or pharmaceutical industries. Ali Kadri (2014) talks even of policies of deindustrialization that have laid to waste the production of knowledge." The indexes used for post-industrial society (Bayat 2010) do not fit the reality of many Arab countries.[9] Two examples may show methodological and/or data collection problems. The ICT indicators for Tunisia showed positive

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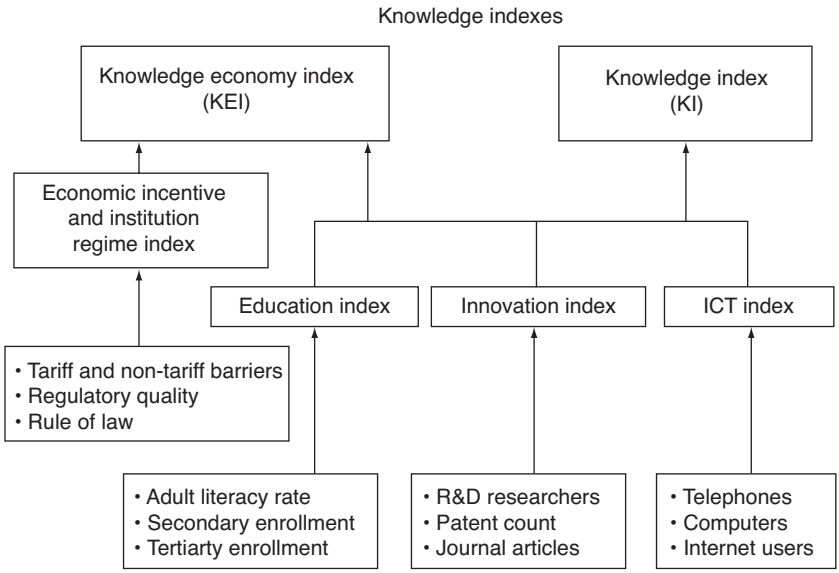

Figure I.1 Knowledge indexes (source: World Bank http://siteresources.worldbank.org/INTUNIKAM/Resources/2012.pdf).

progress in the early 2000s. During that time, Ben Ali took over the internet from the very prestigious research center the Regional Institute for Computer Sciences and Telecommunications (IRSIT). ICT ranking is not sensitive to the state repression, surveillance and filtering; it even tends to favor countries that apply these repressive technologies. The second example is related to the innovation leaders' opinion surveys and ICT; these surveys conclude an advancement in many Gulf countries ranked better than Lebanon. This claim is wrong, as we will show in Chapter 4 (see also Kumar and Welsum 2013), mainly because it equates development to the opinions of some leaders in enterprises more interested in getting access to world markets than in the local economies' growth. Finally, one of the major effects of the "knowledge society" discourse is to legitimate policies, as was the case with the promotion of the concept of good governance by the World Bank, when it was used as a word that permitted avoiding the use of the word *democracy*, seen as politicized. So far we don't know if the knowledge society discourse is just a mask without real effect, or if it will, somehow, trigger some unintended effects. It is not anecdotal to mention that in Saudi Arabia, the Center for Strategic Studies of King Abdul Aziz University launched a series of e-books[10] on the knowledge society, in which we were positively surprised to find that while writing on the contribution of Saudi women in research, the author alludes to the violation of women's rights in this country. It is too early to see how society will benefit from such discourse to "reform" society and produce a critical thinking-based research.

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We have tried, as have others, to keep an optimistic view about the future. But hiding the situation by the ritual invocation of the "knowledge economy" or the "knowledge society" as a solution to the problem of research is nothing but a rhetorical tool. We, as social scientists, cannot but convey this permanent feeling of unfulfillment that our colleagues express in their own words when they blame a "brain-dead country" (!), the inadequate procedures and the short-sighted policies. Although not unanimous, these negative judgments are quite common and contrast strongly with the positive and political platitudes served by governments concerning research: that we should triumphantly enter into the new knowledge economy, leaving behind us under-development, and embracing willingly globalization and its benefits! (See such discourse in Center for Mediterranean Integration 2013). Beyond the resources issues, engineers and economists are challenged to accompany this change while political challenges are still very important, including the democratic ideal that was behind the nahda (Arab renaissance).

Even worse, social sciences have no part in that; national councils and ministries are very cautious in dripping resources by small amounts such as to justify support for social sciences and thus not be accused of barring the research support against social scientists, and simultaneously pretend social sciences are not "of the same nature" and thus do not "really" participate in the research environment. Social scientists themselves have done little to overcome this state of affairs. Social sciences are still very fragmented (with interdisciplinarity not yet to enter into the Arab world), while the scientists publish too little, reject the collective and teamwork and are seeking simply to survive in the university system. To our knowledge, the Arab Council for the Social Sciences is one of the very few initiatives that seeks to overcome all these issues and create a funding scheme that can appropriately benefit the social sciences. The diagnosis concerning the social sciences is rather worse than those of the natural sciences: it often relates excessively to the political engagement of its members at the expense of the content of their research (and sometimes the opposite: technical social science with no political soul). It relates to the way social sciences are barred from being a research domain and is still very much thought about as "intellectual work" of some kind (presumably different from that of an ecologist or a physicist) or as a political and ideological activity.

Strangely, as we will show, research (even in the social sciences) may still be a marginalized activity in the Arab world, but scientists in the Arab world today are more likely to be equivalent in training and social profile to their European or American counterparts. In retrospect, from 20 years ago this is an extraordinary change, as compared to the situation in the mid-1990s (Gaillard and Schlemmer 1996; Gaillard 1994). Thus we have a paradox well-illustrated by a Syrian professor, an engineer in material sciences, who told us back in 2007, after having spent 12 years in Japan: "I have produced 12 high-level peered articles in twelve years in Japan; today, I am closing twelve years in Aleppo since I came back and I have not been able to publish even one paper!" So the environment is what makes the difference. And the research environment is the most important subject of this book.

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3 Understanding the practice of research

Research as a social activity needs to be recognized politically, since most of it is public or publicly funded. Before going any further, it is essential to remind readers that this is not a default proper to "poor" countries as is hinted in some international reports that underline with a suspicious insistence the low level of private funding. A majority of research has always been public, whereas development (or R&D) in firms is usually privately funded. In Europe, the share of publicly funded research is higher than in the United States. However, the extent of this varies from country to country. In the rest of the world, large variations also exist, but research is mainly funded and performed by public institutions. This is also the case in the Arab world.

Most of the original and breakthrough research is public: infrastructural work and the surveillance economy that is needed to monitor local resources require levels of investment that no private firm is willing to fund (but will gladly share). Even the most profitable and commercial private firms developed new technologies that come directly as a result of public programs (Mazzucato 2013). These reminders are necessary because many voices call for a strong participation of the private sector; however, it is also necessary to keep in mind that the private sector will never fund the so-called basic research.[11] Thus, politics, plain and common as they are, play an important role in the game. Jean-Jacques Salomon (2001) points out that it is not because it concerns science that science policy is any more "scientific" than other public policies. Indeed, science (and technology) policy is as messy as any other policy: it relies on political work, political alliances and the use of scientific activities as political resources. Failing to recognize this political nature of science policy comes from a bureaucratic vision on what science is about.

There are two aspects that deserve our attention on this front: the political standing of science inside the state, and the relevance of the activity itself.

Roland Waast (2006) urges us to examine the political position of science when he mentions the need for a "pact" that elites can establish between them and with the political personnel in order to develop research – a rather strange and remote activity that seems to be far away from everyday life. The political forces and the institutional structures within a country should reach an agreement. A country where internal disagreement is strong will be less prone to develop this inside-the-walls obscure activity that serves no immediate and visible purpose. Marcel Antonorsi-Blanco and Ignacio Avalos (1980) wrote some famous pages 35 years ago mentioning that science is interesting only when it allows one to inaugurate some libraries. Most importantly, Mouton and Waast (2009) have shown that the reasons why some middle-income countries actually give priority to research does not rely on GDP, investment or any other resource; rather, it depends upon a political choice. When research becomes part of the arsenal of wealth and power, then it is given some attention. Of course, that is an indication of which research areas will be favored by state policy, areas that will be shown in Chapter 2 when we study the development of specialization patterns for each Arabic country.

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So, what is research useful for? This question relates to another one: Whom does it serve? We would rather tackle this second issue here, by focusing on the particular question of the *relevance of scientific knowledge*. It appears to us that this is an issue at the very heart of the relatively marginal interest for research in Lebanon, Jordan and more generally in the Arab world. It is the issue of the relevance of scientific activity that crystallizes all discontents: everyone has a solution for science and why and how it should be, and how it should be useful to development, modernization, integration of the world economy, whatever you name as grand national objectives.

We follow the tracks of Antoine Zahlan, who is a long-time observer of scientific development, and his recently published book (2012) that not only underscores a general move toward more scientific activities, as we all do, but also carries out a reflection on why scientific research should be developed. Zahlan's book, like many assessments, calls for more research and innovation. This is based on a diagnosis of the low intensity of research, and is accompanied by a wish that science and/or innovation will ultimately become a matter of priority for the Arab states. Zahlan quite bluntly states that not one Arab country has ever given science and technology a chance, despite the rhetoric about the necessity for science. He also states that the issue is related to the fact that science does not serve any strategic objective like defense, feeding the people, guaranteeing their security or supporting their economic activities. He insists that science and technology should be recognized or the sovereignty of the country could be undermined. While he is interested to understand why the research has been marginalized so strongly, he fails to investigate why it happened this way.

In this book, we make a claim not only about the necessity of research, but of research that has neither direct economic objectives nor "strategic" objectives. Research that is curiosity-driven is a major ingredient for the future. It can lead to fundamental breakthroughs and indirect economic advantages. It can lead to unexpected results, or to a dead-end, but failure, in this case, can be a major breakthrough since it obliges us to re-open other basic avenues. We seem to repeat an old song here, and in reading it young researchers might find these old-style and démodé claims of university professors that just defend their corporation. However, in the Arab world there is a sort of mantra of pragmatic usefulness that has also fed the idea that the future will be "engineered," that translates also into a good deal of useless research, not unlike many other countries in the world, that does not favor creativity and a critical stance. Our claim is that the research we have been seeing in most of our interviews relates rarely to path-breaking work not because of a lack of resources, but because of lack of audacity, lack of organization and lack of independence. As Louis Pasteur said, chance only favors prepared minds. Alexander Fleming would never have found penicillin if he had not been actively engaged in searching for an antiseptic. His cultures were contaminated by pure chance, but the identification Fleming did later of the anti-bacterial effect of this specific substance was anything but chance. It was systematic research and openness that guided the researcher in a path paved by previous similar discoveries. Serendipity, this

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curious phenomenon that produces simultaneous inventions, unexpected results and amazing innovations, produces immense social and cultural benefits (see the beautiful book of chemist Jean Jacques (1990) called *L'imprévu ou la science des objets trouvés*). Some of these benefits, although difficult to measure, are quite straightforward: the first and foremost result is attracting young people to research, increasing the awareness about the fact that not everything can be bought outside our frontiers, and that genuine and original research is ground for powerful economic, political and cultural independence. There is also a strange, often implicit, belief that research that is not useful should be left aside: urgent tasks for the development of the country should lead the way. Why is it that non-hegemonic countries shouldn't enter into these areas of research that have no immediate relation to development? And, since all this is about judgment, who is the authority that decides what is useful or not?

We believe this last question is the crux of the matter: funding decisions, recruitment, publication, awareness and technology transfers are activities that relate distant interests and different social worlds. The power of research is the fact that it creates linkages between socially different worlds: different social classes, different locations, different places, different interests and different objects. This is a very powerful tool and not only does it create bridges among different sides, it also invites us to think differently about development itself. None of these aspects can be observed other than by focusing on research practice.

And it is exactly what this book intends: to investigate some of the research practices in the Arab world through the case of Lebanon. We are also particularly aware of the situation in Jordan, where we have had many interviews, particularly in the social sciences. We have also examined the institutional situation of the Arab countries. The objective here is not to focus on success or failures, but to depict the Janus-like face of Arab research, poised between the negative and the positive, faced with two potentially opposing strands: the local relevance and its internationalization. We would like to critically assess the role and dynamics of research, not perform an evaluation.

In the Arab world, most, if not all, countries failed to undergo the policy changes we are mentioning here. Neither the institutionalization of research, nor the scientific community formation seemed to have been taking place. Social and political issues have often not revolved around scientific research; worse, research has often not really integrated any of the local social and political issues. Even if we exaggerate a bit (as we will show, mainly in the second part of the book), most, if not all, of the "hot" issues in science, be it natural or social sciences, were developed outside the frontiers of the Arab nations. Known for their originality, few scholars, including European descendants and the European immigrants to the Arab world, were recognized for their interest in the local conditions. If a bright young Arab PhD student finishes his studies in France, the best choice is either to stay in France or change profession and get out of academia. The mostly authoritarian regimes applied a continuous process of reinforcing heightened pro-development policies, were blinded to the university

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environment, restricted themselves to short-term policy objectives, under-funded public laboratories and repressed reflexive thought and freedom of expression. Sparse cohorts of highly trained personnel engaged in public organizations as a unique means for research. Most of the universities were never seen as the locus for research either. And, meanwhile, there was no construction of a scientific community, which was neither socially nor politically recognized. When these groups were created, it was always along disciplinary lines, with weak internal social exchange mechanisms (journals, meetings), haphazard international collaborations and sometimes even lack of recognition of research practices inside the training institutions (schools and universities). The effect of all these phenomena has been devastating; most Arab countries have become blind to the circumstances occurring around them and even inside their own societies and their own natural environments.

As mere reflections of the Arab revolution, universities and research centers have also heard urgent demands, such as employment, more freedom of speech and an increased scope for practice. To commit to such, we repeatedly hear demands about the need for better governance of the research systems. Slow administrative processes, heavy bureaucratic burdens, corruption, unclear methods of management and opaque decision-making processes are part of the institutional structure of the research-performing units that are manifested in the university systems. They translate into inadequate management procedures that affect directly research, especially inside universities.

4 Some interrogations and choices

The time is right to understand why this absence of reflexivity. Research – or rather the absence of research – has left a profound wound that will take many years to heal. Our proposed remedy is to trigger a wider reflection on the status of research in the Arab countries, beginning with Lebanon. We do not focus on "science," nor "innovation" nor "knowledge economy," but only on how research is working.

We adopt a national perspective (we will sometimes refer to the research systems of the Arab countries),[12] although the dynamic of research and innovation is not only related to national policies and national frontiers, it is a dynamic dependent on many social actors directly or indirectly involved in the development of scientific activities that work at the global or national level, according to their own needs, perceptions and objectives. Their logics of action may thus be different, divergent, or in direct opposition to one another and are observable at the local (and national) level where programs effectively translate into actual work.

We are also interested in scientific collaborations, an instrument through which research has grown locally; also, through which the training of future researchers is done. Research has always been an international endeavor based upon international collaborations. They play a structuring role in countries with scarce resources, less historical experience, or less diversified research systems. Collaborations seem to be a founding element of a local scientific community,

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along with a more localized effort to structure disciplinary fora, publications and management of resources. It is thus always by seeking to maintain this tension between what is recognized internationally as a valid interrogation and what is the more localized need that research is constructed. Institutions play an important role because they maintain a certain continuity as they guarantee sufficient resources to permanently feed labs and teams, whereas a project-base science tends to be always "on the go" by seeking funding opportunities. Academics and scientists thus act as geo-strategists in their respective disciplines by identifying main actors and possible collaborations. In addition, they act as entrepreneurs of research by managing permanent resources which include personnel, PhDs and post-docs, money and information.

In the scope of public health, manufacturing innovation, biological and other natural resource management, or pollution, there is not one issue that is clearly not global. Questions which include access to anti-retroviral medicines, or intellectual property disputes over global technologies, or disputes over the management of local knowledge systems (e.g., in natural products with pharmaceutical action) or biodiversity resources are fundamental issues involving human security, energy, food security, environmental degradation and desertification, and demand local solutions draw upon global knowledge resources. To do so, these resources are all developed and accessed through research. Therefore, a non-existent research structure misses the ability to manage the issues. Research also plays a key role in international fora where standards defining legal codes, security, health and trade regulations are debated and established. Membership in the exclusive club of those proposing norms and regulations at the global level is determined by research. All these reasons make really urgent the development of research in the Arab world.

Non-hegemonic countries, as mentioned before, have a very minor role in the global "agenda" setting for research. It is important to keep in mind that there inherently exists an agenda for research, which is always political; ultimately, influencing how knowledge is created, used, and disseminated, a process that is still not well understood in the Arab region. Because of the globalized nature of scientific knowledge, an active research structure requires the development of multilateral linkages, involving centers in different countries. Until now, various new institutions, for example those mentioned by the Arab Knowledge Report, have been national endeavors with little multilateral cooperation. This relative isolation is a symptom of lack of sufficient confidence, in all senses of the word, and from all actors involved.

To understand how the issues can be turned into a research and innovation agenda, we focus on the conditions of knowledge production, dissemination and use, by looking at the nature of existing problems in academic life inside universities and research centers of the region. When it comes to innovation, it is even less understood because of the scarcity of studies on what effectively happens inside private and public economic sectors.

In order to understand that, we will rarely use the word "*science*" as our interest lies in *research*. We are indeed interested in the study of research in the

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making. As Hebe Vessuri *et al.* (2013) reminded us, we need to frame the discussion in terms of a transition from the culture of "science" to the culture of "research." For Vessuri, research and society today are entangled to the point where they cannot be separated any longer. For this reason, we opt to study the research practice in Lebanon and not Lebanese science, which is the practical activity of doing scientific research and not how its results become stable "as a science." As Bruno Latour (1987) pointed out, "science" is cold, straight and detached, whereas "research" is warm, involving and risky. Science puts an end to the vagaries of human disputes, research creates controversies; science produces objectivity by trying to escape the shackles of ideology, passion and emotions. Ghassan Hage (2013) adds that Latour sees research to "capture" and to "extract" knowledge as part and parcel of the very apparatus of capture and extraction that constitutes modern capitalism. He, therefore, invites us to think more carefully about the kind of reality in which research is enmeshed and about the possibility of writing and even performing research differently.

With these choices, we also would like to insist that opportunities for increased research activity will never be the outcome of research "on its own," "for its own sake," just because of the mere increasing of numbers of academics, or through the organic growth of the academic sector or simply increasing entrepreneurial activity. Mouton and Waast (Mouton and Waast 2009) show that many reasons explain this development of research activities, such as historical precedent, the role of the state, the relation of the state to its scientists and to the use of knowledge in the state apparatus, the type of development strategies (and to what extent national development becomes an objective) and trust in science. As we also mentioned above, it is also related to how elites view science. Investment in research and innovation is a policy choice, and in non-hegemonic countries the active decisions of the state influence more profoundly these choices than countries with multiple actors engaged in research and innovation and broader historical commitment to research.

5 Sources and methodology

This book is the outcome of a long reflection on the status of knowledge production in the Arab world by the use of not only empirical observations, but also historical-structural analyses. In addition of bibliometric, empirical and desk research, we have longstanding experience in this field as a researcher and participant observers.

Rigas Arvanitis has developed programs on the dynamic of research, the links between research and production, the rise of scientific communities in the developing world, the international collaborations in science, the study of technological learning and innovation in firms. He has worked in France, Venezuela, Mexico, China and the Arab Mediterranean countries (17 years permanently outside Europe). Sari Hanafi, as editor of *Idafat: The Arab Journal of Sociology* (Arabic) and a member of the editorial board for many Arab and international academic journals,[13] has overseen a large number of social science manuscripts.

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Also, by being a faculty member at AUB, he draws on many arguments grounded in his experience and by doing so this university is considered for this book a special case study. Also, as director of a research center – Center for Palestinian Refugees and Diaspora (Shaml) – he was exposed to policy and public social research. Being vice president and a prior member of the Executive Committee of both the International Sociological Association and the Arab Council of Social Science familiarized him with issues related to the formation and institutionalization of the scientific community. We should admit that this native familiarity with the universe that we analyze was thus an asset, but could also be an obstacle that we had to overcome.

In preparing this book we relied on a long desk review of existing country studies in research and innovation in the Arab region (Hanafi and Arvanitis 2013a) and a strengths, weaknesses, opportunities and challenges (SWOC) analysis (Hanafi and Arvanitis 2013b). In this manner, we systematically reviewed most information on research policies and research institutions. We also reviewed available science and technology indicators and we examined the question of data in the region.

In addition, we conducted the following surveys, whose methodology will be detailed at the beginning of each chapter:

- In-depth interviews in 2009–2010 in the Arab East (Egypt, Syria, the Palestinian territory, Jordan and Lebanon) with 23 social scientists about their authorship practices and their participation in the evaluation of colleagues with regard to promotion.[14] Interviews were organized around accounts of personal stories of research and publication, the importance of writing, the different tasks undertaken in the research process and the decision-making processes of journals.
- We underwent a complete analysis of the policy framework in Euro-Mediterranean cooperation. We examined all documentation provided through international negotiations that R. Arvanitis had participated in and were publicly made available. Moreover, as head of the ESTIME project, Arvanitis has reviewed a series of research policies in the whole Arab region (Arvanitis 2007).
- 203 CVs of scholars from Egypt, Jordan, Syria, Lebanon and the Palestinian territory were broadly studied in 2009–2010. These CVs were collected over the last four years through research on university websites, together with consultants' CVs provided by the UN human resource department, as well as from those who submitted manuscripts for publication in the journal *Idafat: The Arab Journal of Sociology*. We use these CVs only to look at the language of publication, the outlet of publication, the ratio between published articles, newspaper articles and unpublished reports, and finally at participation in conferences, workshops, public and academic talks. This "sample" cannot be considered in any way representative of the Arab East social scholarly community, and therefore we do not use percentages in this analysis.

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- Online survey by questionnaire that serves the purpose of organizing the issues at stake. The 27-item questionnaire survey concerned the use of references in PhD and Master's these, and was answered by 165 people who hold a Master's or PhD degree from a university in the Arab world, regardless of discipline.
- The syllabi of 30 social science courses taught in Université Saint-Joseph of Beirut (USJ), the Lebanese American University (LAU) and the American University of Beirut (AUB) were analyzed.
- A systematic random sample of 225 op-eds in 2010–2011 to determine the importance of the contribution of academics to editorials, compared to other categories of authors. Three Lebanese newspapers were chosen based on a combination of high circulation rates and robust national and regional coverage (*Al-Akbar*, *Al-Nahar* and the *Daily Star*). In addition, we increased the number of analyzed op-eds published in Lebanese newspapers by targeting academics appearing in the last three years (2011–2013) in the same three newspapers, as well as four additional newspapers. In total, 147 op-eds authored by Lebanese scholars were studied.
- Survey based on semi-structured in-depth interviews focusing on the biographies of a sample of 125 professors/researchers in Lebanon (respectively 50, 42, 23 and 5 from AUB, LU, USJ and CNRS) and 80 professors/researchers in Jordan (the three biggest public universities: University of Jordan in Amman; Yarmouk University in Irbid; and Jordan University of Science and Technology).[15] Multistage cluster sampling was used. The questions revolved around the conformation of the scientific community, scientific pressures, role of institutions, influence of academic mechanisms (evaluation, promotion, etc.), role of gatekeepers in the publication system and social, including family, factors that directly affected the biographies of the scientists.
- Bibliometric studies on Arab publications in general and Lebanese and Jordanian publications in particular, based on Web of Science (WoS), Scopus for English production and E-Marefa. We created a publication database using available databases as well as the annual reports of faculties in various universities.
- Specific bibliometric analysis of academic articles written on the Arab uprisings, in Arabic, English and French, yielding 519 results. English references were primarily derived from WoS and Scopus; Arabic references were scarcer, primarily due to the limited availability of Arabic databases. E-Marefa, the only reliable Arabic database, yielded only 15 results, while the rest of the articles were only available in hard copies.[16] Concerning the French articles, they were derived from the CAIRN platform.
- A large survey by questionnaire within the framework of a European project called MIRA (www.miraproject.eu), answered by 4,340 researchers from 38 countries (27 in Europe and 11 Mediterranean country partners of the EU). More than 100 Lebanese scientists were included in this survey.[17]

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6 The organization of the book

Combining statistical profiles, ethnographic vignettes and prosopographic detail, this book is organized into two parts. The first part is about research dynamics, Arab research systems and knowledge produced in all disciplines; the second part focuses particularly on the social sciences.

In Chapter 1 we present a descriptive analysis of research, innovation systems in the Arab region and research funding. It tests the significance of indicators commonly used in most publications about science and technology in the Arab region and provides a critical assessment. Chapter 2 delves into one of the outputs of the research – the publication – and analyzes the size, authorship and different impact factors. This chapter also has a special focus on different levels of collaboration: local, regional and international. However, as research cannot be understood without investigating both locus of research (institutions) and the researchers themselves, Chapter 3 investigates universities and national and diasporic researchers. We end this part by studying the research practice in Lebanon as a case study and partially compare it to the Jordanian case (Chapter 4).

The second part tries to locate the size and place of production of the social sciences in the Arab world and attempts to highlight the different forms of compartmentalization (Chapter 5). Then we examine the Arab sociological production through *Idafat: The Arab Journal of Sociology* (Chapter 6). This case will show the marginalization of the Arabic language, a topic we examine in more depth in Chapter 7. Chapter 8 is an opportunity to examine the interactions between scholars in the Arab world and abroad through the case of academic journal productions on the Arab uprisings. However, research is not only limited to academic production (articles in refereed journals and specialized books), but also exists in the realms of knowledge translation in policy advice or public activities. To examine the "public" social sciences, we unfold the writing op-eds in Lebanese newspapers (Chapter 9). In the concluding chapter, we draw the arguments together and consider the implications of our analysis for different stakeholders (the scientific community, policy-makers and the public).

Notes

1 For the concept of boundary work, see Gieryn (1995).
2 Sources: expenses of R&D and world publications are from observatoire des sciences et de technologies (OST) reports of 2008 and 2010. (www.ost.uqam.ca/en-us/data.aspx). GDP current prices are from World Economic Outlook (IMF) series.
3 We have delved extensively on this issue in Gaillard and Arvanitis (2013: 2) and Arvanitis (2011b).
4 www.estime.ird.fr.
5 See the first chapter of the Arab Knowledge Report (UNDP 2009), which stresses the different meanings and visions that the term entails.
6 A knowledge economy is an economy in which growth is dependent on the quantity, quality and accessibility of the information available, rather than the means of production. It is thus primarily defined by ensuring access for all to computers and the internet (World Bank 2002).

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7 Antoine Zahlan, with a different wording, insists on the need to integrate more reflection in the development of knowledge organizations:

> Today the Arab countries could easily mobilize thousands of leading scholars – scientists, engineers, and doctors – to initiate high quality universities. Surprisingly, there are no tendencies toward improving higher education by utilizing national intellectual resources.… Scholarship, quality, research, and knowledge are still not prime considerations.
>
> (Zahlan 2012: 165; see chapter 10, pp. 157–175)

On Emiratis knowledge society, see Dumortier (2008: 195).

8 See the Knowledge for Development website of the World Bank. There are two indicators for performance (average annual GDP growth [percent] and Human Development Index); three for the economic incentive and institutional regime (tariff and non-tariff barriers, regulatory quality and rule of law); three for education and human resources (adult literacy rate [percent aged 15 and above], secondary enrolment and tertiary enrolment); three for innovation system (researchers in R&D, per million population, patent applications granted by the USPTO, per million population and scientific and technical journal articles, per million population); and, finally, three for information infrastructure (telephones per 1,000 persons [telephone mainlines + mobile phones], computers per 1,000 persons and internet users per 10,000 persons). For more details about KAM, see Chen and Dahlman (2005) Note that, because countries are ranked on an ordinal scale, the KAM illustrates the relative performance of a country as compared to other countries in the KAM database. As such, when a country's performance in a specific variable is indicated to have declined, it could have occurred for two reasons. First, the country's performance in that variable declined, resulting in lower values in absolute terms. Alternatively, the country's performance could have improved and resulted in large absolute values, but other countries experienced even larger improvements, leading to the country's ordinal ranking falling and resulting in a lower value in relative terms.

9 Countries such as Tunisia, Egypt and Morocco have an industry whose bulk specializes in international sub-contracting, requiring an upgrading process which is different from that prescribed by the recipe of the knowledge economy.

10 Curiously, all these books are publications without authors.

11 Counter-arguments usually come from historians of technology and from the chemical sector. DuPont's labs were seen, in the 1950s, as similar to a certain extent to academic labs. Today, no R&D unit of a good size would exist in the same form; with the changing paradigm of the 1980s came also the change of orientation of R&D units in firms (see Dennis 1987).

12 This was briefly presented in our report titled "The broken cycle between research, university and society in Arab countries" (Hanafi and Arvanitis 2013a).

13 *Al-Mustaqbal al-Arabi* (an Arabic refereed journal in the social sciences targeting specialized and non-specialized audiences), *International Sociology*, *International Journal of Contemporary Iraqi Studies*, *Global Sociology*, *Journal of Iranian Social Studies*, *South African Review of Sociology*, *Istanbul Journal of Sociological Studies* and *International Sociology Review of Books* (ISRB).

14 The time spans of interviews fluctuated between one-and-a-half hours and two hours.

15 The time spans of interviews fluctuated between one and two hours.

16 In the following journals: *Idafat*, *Al-Mustaqbal Al-Arabi*, *Majalet al-Dirasat al-Falastiniya*, *Majalat el 'Ouloum el Siyasiya* and *Omran.*

17 More details on the MIRA Survey can be found in Gaillard *et al.* (2013).

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