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## Experimental Visions of Modern Morocco: Expertise, Popularization, and Everyday Technologies in the Work of ‘Abd al-Salam al-Diyuri

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### Abstract

This article examines the work and trajectory of ‘Abd al-Salam al-Diyuri, a Moroccan engineer educated in Egypt who became a nationalist writer, editor, and publisher during the last decade of the French Protectorate (1912–56). One of only a few Moroccan engineers trained in Arabic during this period, al-Diyuri developed a vision of modernization rooted in the popularization of technical knowledge that distinguished him from colonial engineers as well as nationalist elites. French experts exercised an epistemic dominance over the practice of engineering under the protectorate as well as after Morocco’s independence. In this context, al-Diyuri’s arguments traced the contours of an alternative future for the country—one that tied decolonization to the cultivation of technical competencies among the public at large. This article follows the path of a nationalist engineer and intellectual whose work both embodied and attempted to move beyond a contradiction between the democratization of knowledge and the demands of development.

**Keywords:** decolonization; expertise; French Protectorate; Morocco; nationalism; technology

In the spring of 1952, French security services in Morocco detained and expelled ‘Abd al-Salam al-Diyuri, a resident of Tangier, from the French Zone. Protectorate officials described him as a “nationalist notoriously known in Tangier and suspected of ensuring contact between the two zones.”<sup>1</sup> A year later, al-Diyuri again attempted to cross the border and wrote in protest to the administrators who had banned him from the French Zone—citing his extensive commercial and technical ventures there.<sup>2</sup> He explained that his frequent trips to Casablanca were to manage a radio repair shop that he had opened years before in the French Protectorate’s economic capital.<sup>3</sup> These visits also provided an opportunity to distribute the scientific and literary review, *al-‘Ulum wa-l-Funun* (Sciences and Arts), which he published in the Tangier International Zone. In his communications with colonial

<sup>1</sup> Cabinet Diplomatique Rabat and Consulat Général Tanger to Secrétariat Politique Section 3, 4 October 1947, 1MA/282/78, Centre des Archives Diplomatiques de Nantes (hereafter CADN); Sous-Directeur des Services de Sécurité Publique, Ninet, to Directeur de l’Intérieur, 13 August 1953, 1MA/282/78, CADN.

<sup>2</sup> French officials would deny his request. ‘Abd al-Salam al-Diyuri to Secrétaire Général de la République Française au Maroc, 26 July 1953, 1MA/282/78, CADN.

<sup>3</sup> Following the signing of the Treaty of Fes in 1912, France established a protectorate over the majority of Moroccan territory. Later that year, Spain’s zone of influence in the northern part of the country was transformed into a protectorate that covered a strip of land along the Mediterranean coast, including the cities of Ceuta, Melilla, and Tetouan, as well as territories to the south of the French Zone. The city of Tangier remained outside this Spanish Zone and would become a jointly administered international zone in May of 1924.

officials, al-Diyuri presented himself as an engineer and entrepreneur whose work had few political implications.<sup>4</sup> A different vision emerges, however, from his intellectual and professional trajectory.

One of only a few of Moroccans during the interwar period to have received an engineering education in Arabic, al-Diyuri also was an active participant in Morocco's nationalist movement in both the French and Spanish protectorates.<sup>5</sup> He maintained close connections with engineers and intellectuals in Egypt, where he lived for a number of years, as well as in Syria. During a career at the margins of the colonial engineering community, he worked as a telegraph operator, radio repairman, publisher, journalist, teacher, and occasional architect. Through his writing and his political activities, he engaged in debates about nationalism, decolonization, modernization, and the place of science and technology within these movements. In dozens of articles published from 1948 to 1953, he argued that experimentation, scientific language, and technological skill were resources that could be harnessed not only by those with formal training but by all Moroccans struggling for independence.

For the French officials who stopped al-Diyuri at the border, the Moroccan could only "claim" to be an engineer.<sup>6</sup> His credentials held little weight in the French Protectorate (1912–56), where technical hierarchies mapped rigidly onto colonial ones. As a professional class, engineers in both the public and private sector in Morocco were almost exclusively recruited from France. These engineers followed similar professional pathways, read the same journals, and often shared the experience of military or colonial service.<sup>7</sup> In the protectorate's public works administration, French citizenship was a requirement for employment as an engineer during the interwar period.<sup>8</sup> Even when protectorate institutions provided for limited vocational training, the paltry educational resources devoted to the "public instruction" of Moroccan residents tended to track students into low-level technical positions.<sup>9</sup> So entangled was the category of "the engineer" with notions of Frenchness that when asked to provide the names of qualified Moroccans for a delegation to an international technical conference in 1948, the director of public works, René Girard, would claim, inaccurately, that "there are no Muslim Moroccan engineers."<sup>10</sup>

<sup>4</sup> 'Abd al-Salam al-Diyuri to Secrétaire Général de la République Française au Maroc, 26 July 1953, IMA/282/78, CADN.

<sup>5</sup> A news story from 2012 suggests that he was in fact the first Moroccan to graduate with an engineering degree from the School of Applied Engineering (at the time, the Institute of Applied Geometry) in Cairo. Abu al-Khayr al-Nasari, "al-Duktur Muhammad Ya'ala: Takrim al-Diyuri Tanshit li-l-'Alaqa Bayn al-Maghariba wa-l-Misriyyin," *Maghress*, 26 January 2012, <https://www.maghress.com/ksarforum/993>.

<sup>6</sup> "Fiche de renseignements concernant Abdesslem Diouri (alias Abdul Salem Dijouri alias El Debouri)," attached to Paul Hubert, Contrôleur des autorités chérifiennes de la zone de Tanger to Directeur de l'intérieur à Rabat, 2 February 1951, IMA/282/78, CADN.

<sup>7</sup> Engineers employed by the protectorate state applied via a competitive exam and once hired were typically deployed across the territory. French civil engineers in particular saw their interests and voices represented in a series of French language publications such as the *Construction au Maroc*, *Construire*, and *Batir* professional journals, which published news about the profession's advancement in Morocco and relevant stories from other colonial contexts and metropolitan France.

<sup>8</sup> "Concours et examens de 1926 pour l'admission au grade d'ingénieur adjoint des travaux publics de l'état," undated, E0398, Archives du Maroc, 2.

<sup>9</sup> For studies of colonial education policies in Morocco, see Mohamed Benhlal, *Le collège d'Azrou: Une élite berbère civile et militaire au Maroc, 1927–1959* (Paris: Éditions Karthala et IREMAN, 2005); Spencer D. Segalla, "French Colonial Education and Elite Moroccan Muslim Resistance, from the Treaty of Fes to the Berber Dahir," *Journal of North African Studies* 11, no. 1 (2006): 85–106; Katherine E. Hoffman, "Purity and Contamination: Language Ideologies in French Colonial Native Policy in Morocco," *Comparative Studies in Society and History* 50, no. 3 (2008): 724–52; Spencer D. Segalla, *The Moroccan Soul: French Education, Colonial Ethnology, and Muslim Resistance, 1912–1956*. (Lincoln, NE: Nebraska University Press, 2009); Susan Gilson Miller, *A History of Modern Morocco* (Cambridge, UK: Cambridge University Press, 2013), 99–102; and Hamid Irbouh, *Art in the Service of Colonialism: French Art Education in Morocco, 1912–1956*. (London: I. B. Tauris, 2013). For a study of colonial education under the Spanish Protectorate see Irene González, *Escuela e ideología en el protectorado español en el norte de Marruecos, 1912–1956* (Barcelona: Bellaterra, 2014).

<sup>10</sup> René Girard, Directeur des Travaux Publics to Secrétaire Général du Protectorat, "Conférence technique mondiale," 6 July 1948, IMA/1/221, CADN.

During the interwar years, the first generation of Moroccan nationalists had suggested that access to technical education and engineering credentials were political issues. Founded by Allal El Fassi, Mohammed Belhassan Ouazzani, and Ahmed Balafrej, the Moroccan Action Committee (Kutlat al-<sup>ʿ</sup>Amal al-Watani, or Comité d'Action Marocaine)—the country's first nationalist political organization—argued in the 1934 *Plan de réformes marocaines* that the French Protectorate's near total neglect of public education for Moroccans was among the worst offenses of the colonial system.<sup>11</sup> To counter this, the committee proposed training Moroccan technical cadres who would occupy high-level positions within the colonial administration.<sup>12</sup> This meant building a university system, creating programs for future engineers to study in France, and expanding vocational training in Moroccan primary schools.<sup>13</sup> This first generation of Moroccan nationalists largely took for granted that the end goal of these reforms was to produce a local technical elite to help govern the country by means of a French technical education.<sup>14</sup>

The experience of a Moroccan engineer from the Spanish Zone, trained in Arabic and with extensive ties to professional communities in Cairo and Damascus, offers a counterpoint to this history of French dominance over both engineering education and the very vision of modernization that elite nationalists in Morocco would adopt. I argue that 'Abd al-Salam al-Diyuri's trajectory traced the contours of an alternative technopolitical future for Morocco—one in which the process of formal decolonization could have involved a rethinking of the role of scientific and technical knowledge in the postcolonial polity.<sup>15</sup> What I offer here is not an exhaustive account of a systematic thinker but a sketch of a provocative bricoleur. This article follows the path of a nationalist engineer and intellectual whose work embodied and attempted to move beyond a tension between the democratization of knowledge and the demands of development. Like other Moroccan nationalists and his engineering colleagues in the East, al-Diyuri accepted the need for skilled specialists to support national independence. Yet he directed his publications, professional efforts, and political work toward diffusing technical knowledge as widely as possible within Moroccan society. Although translating new technical terminologies was a portion of his program, al-Diyuri's contributions to debates about expertise and independence in the Arabic-speaking world concerned democratization as much as Arabization.<sup>16</sup> He argued for a radical expansion of the technically knowledgeable public and for making experimental methods a part of everyday life. In the pages of the nationalist newspaper, *al-'Alam* (The Flag), and his own journal, *al-'Ulum wa-l-Funun*, al-Diyuri demonstrated a commitment to making formal engineering and scientific knowledge as well as matters of craft, maintenance, and religious practice equally accessible to his readers. His vision of who might wield science and technology constituted a challenge to the institutional hierarchies of the protectorate as well as an attempt to go beyond the expert-driven approaches to national development advocated by his colleagues in the Middle East.

<sup>11</sup> Moroccan Action Committee, *Plan de réformes marocaines* (Paris: Imprimerie Labor, 1934), 8–11.

<sup>12</sup> *Ibid.*, 25, 35.

<sup>13</sup> *Ibid.*, 86–87.

<sup>14</sup> To this day, engineering education in Morocco remains in French, a fact that belies systematic attempts at Arabization and signals the longstanding hold of French expertise on the trajectory of engineering as a practice since independence.

<sup>15</sup> I am concerned with how al-Diyuri's work imagined a different kind of "technopolitical regime" for Morocco, a concept Gabrielle Hecht develops to describe "the tight relationship among institutions, the people who run them, their guiding myths and ideologies, the artifacts they produce, and the technopolitics they pursue." Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, MA: MIT Press, 2009), 17.

<sup>16</sup> Beginning before Morocco's independence in 1956, there were multiple campaigns to Arabize education in the country. Although most subjects, including math and the sciences, had been Arabized at the secondary level by the beginning of the 1990s, engineering at the university level would continue to be taught in French, a major obstacle to professional advancement for those students who had gone through Morocco's public school system. See Segalla, *Moroccan Soul*, 237–64.

Al-Diyuri's work illustrates that not all visions of modernization coincided with an absolute faith in the "rule of experts." In his reading of modernizing thought and practice, Timothy Mitchell describes how modern forms of expertise rest upon the theoretical and material dichotomy between reality and representation, a distinction elaborated within institutions and in strategies of governance.<sup>17</sup> For Mitchell, as for others who have critically assessed the conceptual and political structures that came to be labeled "modernization" and "development," this division of the world into humans and nonhumans, nature and technology, or society and the economy has almost inevitably led to political programs organized around a hierarchical approach to knowledge itself.<sup>18</sup> The question remains, however, of how those excluded from the very possibility of rule took up these dichotomies and deployed them for different purposes. How, in other words, did individuals like al-Diyuri transform the meaning of modernization by imagining a process in which all could participate and by valuing the capacity to shift between fields and forms of knowledge over specialization and professional authority?

The tendency to see all advocates of modernization as promoting an expert-led process is at least partially the result of a historiographic focus on those with proximity to state power. Studies of modernization, development, and technology under the French Protectorate, for example, long emphasized either the policies of French colonial officials or the pronouncements of elite nationalists.<sup>19</sup> Recent work in Moroccan history, however, has begun to explore how nonstate and non-elite actors responded to the complex dynamics surrounding questions of reform in law and medicine in ways that have opened up alternative accounts of what "modernization" meant to those on the ground.<sup>20</sup> In ascribing to modernization projects the world over a kind of theoretical consistency, a distinct discursive structure and practice, Mitchell and others have overlooked approaches to modernization and development that were formulated by historical actors who did not necessarily see their visions translated into strategies of rule.<sup>21</sup> By attending to the "entangled geographies" produced through the circulation of experts, theories, and methods, this article examines how the failure of one individual's expert status to translate across national and colonial contexts provoked a concerted questioning of the possibilities of diffusing technical knowledge

<sup>17</sup> Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (Berkeley, CA: University of California Press, 2002), 11, 15.

<sup>18</sup> In addition to Mitchell, Paul Rabinow and Arturo Escobar draw a similar link between discourses of "development" or "modernity" and a distinct approach to knowledge oriented around hierarchical models of expertise. Paul Rabinow, *French Modern: Norms and Forms of the Social Environment* (Cambridge, MA: MIT Press, 1989); Arturo Escobar, *Encountering Development: The Making and Unmaking of the Third World* (Princeton, NJ: Princeton University Press, 2012).

<sup>19</sup> In much of this earlier scholarship, "modernization" is cast as a more or less coherent set of policies and projects enacted by colonial officials to which the first generation of Moroccan nationalists respond by formulating their own visions of a modern Morocco. See Rabinow, *French Modern*; Abdallah Laroui, *Les origines sociales et culturelles du nationalisme marocain, 1830-1912* (Paris: F. Maspero, 1991); Gwendolyn Wright, *The Politics of Design in French Colonial Urbanism* (Chicago: University of Chicago Press, 1991); and Daniel Rivet, *Lyautey et l'institution du Protectorat Français au Maroc, 1912-1925*, 3 vols. (Paris: L'Harmattan, 1998).

<sup>20</sup> For studies of how non-elite actors responded to changing approaches to statecraft and Islamic reform, the making of a colonial political field, and public health and biomedicine, see Jonathan Wyrzten, "Colonial State-Building and the Negotiation of Arab and Berber Identity in Protectorate Morocco," *International Journal of Middle East Studies* 43, no. 2 (2011): 227-49; Ellen J. Amster, *Medicine and the Saints: Science, Islam, and the Colonial Encounter in Morocco, 1877-1956* (Austin, TX: University of Texas Press, 2013); Etty Terem, *Old Texts, New Practices: Islamic Reform in Modern Morocco* (Stanford, CA: Stanford University Press, 2014); Jonathan Wyrzten, *Making Morocco: Colonial Intervention and the Politics of Identity* (Ithaca, NY: Cornell University Press, 2016); and Etty Terem, "Navigating Modernity: Lessons in Government and Statecraft in Precolonial Morocco," *Mediterranean Studies* 25, no. 1 (2017): 76-97.

<sup>21</sup> I build here on David C. Engerman and Corinna R. Unger's call for a global history of modernization that attends not only to modernization theory but also to how it operated "on the ground." David C. Engerman and Corinna R. Unger, "Introduction: Towards a Global History of Modernization," *Diplomatic History* 33, no. 3 (2009): 375-85.

throughout a decolonizing society.<sup>22</sup> As a thinker, al-Diyuri's work also resonated with post-colonial experiments outside of the Middle East and North Africa to develop creative alternatives that neither fully embraced nor eschewed European approaches to science and technology.<sup>23</sup> The alternative he offered his readers, however, was ultimately overlooked by his fellow Moroccan nationalists who favored an understanding of expertise rooted in the reproduction and nationalization of colonial technical hierarchies. Al-Diyuri's call for the popularization of technical knowledge, as well as its failure to translate into postcolonial policy, reveals the possibility and the limits that nationalist figures in Morocco encountered in their attempts to rethink the place of science and technology within the process of decolonization.

### Experimental Itineraries

ʿAbd al-Salam al-Diyuri was born in Ksar el-Kebir (al-Qasr al-Kabir) in 1921 to Fasi parents.<sup>24</sup> The son of Fatima bint al-Hajj Larbi and ʿAbd al-Rahman al-Diyuri, he was educated in a Spanish primary school in Tetouan, the capital of the Spanish Protectorate.<sup>25</sup> The educational environment in the Spanish Zone at the time had been shaped by a close collaboration between Moroccan nationalists and the Spanish authorities. Figures such as Haj Abdeslam Benname worked with the protectorate to push through educational reforms that would culminate in a network of free schools with curricula primarily in Arabic. These schools, which would educate the next generation of elite Moroccan nationalists in the north, aimed to impart the values of Islamic culture and history. Although different high commissioners would support these projects to varying degrees, Spanish educational policy throughout the protectorate period emphasized Spain's long relationship and shared heritage with Moroccan Muslims.<sup>26</sup>

In the late 1930s, the young al-Diyuri taught briefly at the "Free Institute," the Maahad al-Horr, in Tetouan, which was administered by Abdelkhalek Torres's Moroccan Reformist Party.<sup>27</sup> Advancing Arabic-language education was among the chief reforms for which Torres and the party advocated in their negotiations with Spanish authorities, and the Maahad al-Horr was a testing ground for Arabic-language instruction. In 1937, al-Diyuri left the institute to pursue an engineering education in Egypt.<sup>28</sup> He enrolled at the Institute of Applied Geometry in Cairo—the future College of Engineering at ʿAyn Shams University—first to study mechanical and then electrical engineering. In 1944, he received a BS and went on to work as a telephone engineer and eventually for an Egyptian airline.<sup>29</sup>

<sup>22</sup> See Gabrielle Hecht, ed., *Entangled Geographies: Empire and Technopolitics in the Global Cold War* (Cambridge, MA: MIT Press, 2011).

<sup>23</sup> For exemplary accounts of such experiments in the domains of Ayurvedic medicine in India and socialist statistics in China, see Projit Bihari Mukharji, *Doctoring Traditions: Ayurveda, Small Technologies, and Braided Sciences* (Chicago: University of Chicago Press, 2016); and Arunabh Ghosh, *Making It Count: Statistics and Statecraft in the Early People's Republic of China* (Princeton, NJ: Princeton University Press, 2020).

<sup>24</sup> "Renseignements," 22 October 1953, in folder labeled "Notices Bibliographiques," 1MA/282/78, CADN.

<sup>25</sup> Cabinet Diplomatique Rabat and Consulat Général Tanger to Secrétariat Politique Section 3, 4 October 1947, 1MA/282/78, CADN.

<sup>26</sup> Fadma Ait Mous, "The Moroccan Nationalist Movement: From Local to National Networks," *Journal of North African Studies* 18, no. 5 (2013): 738, 740. On the role that the image of Al-Andalus played in these historical reimaginings, see Eric Calderwood, *Colonial Al-Andalus: Spain and the Making of Modern Moroccan Culture* (Cambridge, MA: Belknap Press, 2018).

<sup>27</sup> Lecomte, Conseiller du Gouvernement Chérifien, to Directeur des Affaires Chérifiennes, "Abdeslam Diouri," 4 December 1947, 1MA/282/78, CADN.

<sup>28</sup> After his return to Morocco years later, French officials mentioned rumors that accused al-Diyuri of acting as a Spanish agent while a member of Torres's nationalist party. These rumors remained unverified, however, and al-Diyuri's intensifying political activities upon his return to Morocco after the war certainly suggest a sincere commitment to the nationalist cause. *Ibid.*

<sup>29</sup> Consulat Général de France à Tanger to Chef du Cabinet Militaire Ambassade de France-Rabat and others, "Additif au Bulletin de Renseignements," undated, ca. 1956, 1MA/282/78, CADN.

At the time of his arrival, Cairo was the prime destination for young Moroccans from the north with nationalist leanings. Whereas the younger generations of elite Moroccan families in the French Protectorate often completed their education in French universities, notables in the north were more likely to pursue their studies in the Mashriq.<sup>30</sup> Cairo in the 1930s was the central stage for the cultural, intellectual, and political movements sweeping the Arabic-speaking world. A burgeoning community of Moroccan nationalists also drew the attention of both the Egyptian and the international press for organizing a series of solidarity and protest campaigns after the publication of the *Berber Dahir* in 1930.<sup>31</sup>

Al-Diyuri would remain in Egypt for the duration of World War II. After his return to Morocco sometime in 1946 or 1947, he petitioned the Spanish administration for the right to join the engineering section of the Tetouan *Politécnica*, the main technical school in northern Morocco, and his application appears to have been rejected.<sup>32</sup> He eventually settled in Tangier, where he found work with the American telegraph service and joined *Istiqlal*, the national independence party, briefly serving as the party secretary in Tangier.<sup>33</sup> French colonial intelligence services also noted al-Diyuri's involvement in founding a branch of the Muslim Brotherhood in Tangier—an affiliation he had supposedly established while in Cairo.<sup>34</sup> French officials based in the international zone speculated about al-Diyuri's relationship with the Spanish authorities and whether his ultimate allegiance lay with the nationalist cause, and after 1947 they began to closely monitor his political activities.<sup>35</sup>

In 1947, in preparation for a return trip to Egypt, he received a recommendation from Morocco's Cultural and Educational Delegation and applied to serve as an official representative of the sultan at the third annual Conference of Arab Engineers in Damascus that year.<sup>36</sup> He would go on to spark a minor scandal in Damascus after pronouncing a series of incendiary political remarks that would travel back to the Moroccan press. These conferences were occasions for al-Diyuri to develop extensive professional contacts with engineers in the Mashriq. While participating, he would have acquired a familiarity with debates over the role of engineering expertise in the modernization projects of independent Arab states and a sense of how Arab engineers conceived of their profession's relationship to nationalist struggles in North Africa and elsewhere.

The two engineering conferences that al-Diyuri attended coincided with a moment of intensifying professionalization and the rise of specialized engineering programs in the region. The formal integration of the British-run Royal School of Engineering into Cairo University in 1935 marked the advent of the first national engineering school in the Arab world and was followed in the 1940s by engineering colleges in Baghdad, Aleppo, and Alexandria, which had been the site of the first annual Conference of Arab Engineers.<sup>37</sup>

<sup>30</sup> David Stenner, "Centering the Periphery: Northern Morocco as a Hub of Transnational Anti-Colonial Activism, 1930–43," *Journal of Global History* 11, no. 3 (2016): 435–36.

<sup>31</sup> *Ibid.*, 438.

<sup>32</sup> Cabinet Diplomatique Rabat and Consulat Général Tanger to Secrétariat Politique Section 3, 4 October 1947, 1MA/282/78, CADN.

<sup>33</sup> "Renseignements," 22 October 1953, in folder labeled "Notices Bibliographiques," 1MA/282/78, CADN.

<sup>34</sup> *Ibid.*

<sup>35</sup> Cabinet Diplomatique Rabat and Consulat Général Tanger to Secrétariat Politique Section 3, 4 October 1947, 1MA/282/78, CADN.

<sup>36</sup> Writing in the margins of a note sent to the head of the Secrétariat Politique in Rabat indicates that al-Diyuri had indeed received approval from the sultan, who had seemingly not consulted French officials. He also had attended the second annual conference the year prior in Egypt. Marginalia dated 12 November 1947, *Conseiller du Gouvernement Chérifien* to *Chef du Secrétariat Politique*, 7 November 1947, 1MA/282/78, CADN; *Lecomte, Conseiller du Gouvernement Chérifien*, to *Directeur des Affaires Chérifiennes*, "Abdesslam Diouri," 4 December 1947, 1MA/282/78, CADN.

<sup>37</sup> Prior to this period engineering education in Egypt had undergone multiple shifts—from the days when Egyptian engineers under Muhammad 'Ali Pasha trained abroad in early 19th-century France to the interwar years when their successors challenged their mostly British counterparts for high-level technical posts in state

The postwar period witnessed the creation of an Egyptian Engineering Syndicate (1946–49), a professional organization that aimed to define, legally and definitively, what an “engineer” was and who could claim the title, *muhandis*, for official purposes.<sup>38</sup> The syndicate also advocated for the interests of its members vis-à-vis both their employers (typically the Egyptian state) and their foreign competitors. The organization’s nationalist professionalism provided the ideological and material impetus for the first Conference of Arab Engineers, originally proposed by its chapter in Alexandria.<sup>39</sup> Accounts of these annual conferences offer a window into a distinct sociotechnical imaginary—a vision of the relationship between technology and expertise and a host of social and political projects, from Arab unification to decolonization.<sup>40</sup> This sociotechnical imaginary had a clear influence on al-Diyuri’s later writings, and he would attempt to reimagine a popularized version of this nationalist vision upon his return from Syria.

When al-Diyuri arrived in Damascus in 1947 for the third annual Conference of Arab Engineers, Syria had only recently emerged from the French mandate system.<sup>41</sup> Some five hundred engineers attended the conference, with delegations from Iraq, Jordan, Palestine, Lebanon, Egypt, and the Sudan, and finally al-Diyuri as the sole representative of Morocco. The president of the Syrian Republic, Shukri al-Quwatli, offered the opening remarks in a speech emphasizing Arab unity and the collective project of development:

Arab nations have set records in the domain of technology and industry. The memories they have left continue to remind today’s generations of the level of progress and development that they attained. The creation of the Arab University, whose task it is to reinforce Arab nations’ defenses, gives us the opportunity to unify and direct the efforts of all Arabs in the domains of culture and science. This meeting of the Conference of Arab Engineers marks a step toward this goal.<sup>42</sup>

Al-Quwatli envisioned a sort of technical *naḥḍa*—a reference to the Arab cultural renaissance of the 19th and early 20th centuries. He described a movement sparked by “Arab creators and inventors” and directed toward the interests of a unified Arab nation.<sup>43</sup> The president’s opening speech as well as accounts published in Syria after the conference also referred to the dual *naḥḍatānī* of science and of culture—two elements of the “total renaissance that is

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offices. See M. Ali Kettani, “Engineering Education in the Arab World,” *Middle East Journal* 28, no. 4 (1974): 446; Khaled Fahmy, *All the Pasha’s Men: Mehmed Ali, His Army, and the Making of Modern Egypt* (Cairo: American University in Cairo Press, 2002); Clement Henry Moore, *Images of Development: Egyptian Engineers in Search of Industry* (Cairo: American University in Cairo Press, 2006); and Shehab Fakhry Ismail, “Engineering Heterotopia,” *International Journal of Middle East Studies* 47, no. 3 (2015): 566–69. On the role of British engineering expertise in large-scale irrigation and agricultural projects, see Jennifer L. Derr, *The Lived Nile: Environment, Disease, and Material Colonial Economy in Egypt* (Stanford, CA: Stanford University Press, 2019).

<sup>38</sup> The syndicate’s founding was driven by a younger generation of rank-and-file engineers, and it largely took the place of the smaller, more exclusive Royal Society of Egyptian Engineers, which had existed since 1920. Moore, *Images of Development*, 27–30.

<sup>39</sup> These conferences would eventually culminate in the creation of the Federation of Arab Engineers in 1963.

<sup>40</sup> Sheila Jasanoff and Sang-Hyun Kim define sociotechnical imaginaries as “collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology.” Sheila Jasanoff, “Future Imperfect: Science, Technology, and the Imaginations of Modernity,” in *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*, ed. Sheila Jasanoff and Sang-Hyun Kim (Chicago: University of Chicago Press, 2015), 4.

<sup>41</sup> Al-Diyuri also had attended at least one of the previous conferences while in Egypt. “Le Maroc au Congrès des Ingénieurs de Damas,” *Le Petit marocain*, 2 February 1948.

<sup>42</sup> Cited in a note to the Chef du Secrétariat Politique, “Le 14-9-47 à 21h05 de Londres: Nouvelles de Syrie,” 1MA/282/78, CADN.

<sup>43</sup> Cited in Serres, Ministre de France à Damas, to Ministre des Affaires Étrangères, 3 October 1947, 1MA/282/78, CADN.

brewing in the Arab world.”<sup>44</sup> Within this greater whole, engineers had a role to play alongside the cultural work of writers and translators.<sup>45</sup> According to the conference’s planning committee, “close cooperation” between Arab nations in the areas of technological and economic development would ensure the autonomy of recently liberated countries and help prepare others to “cast off the nightmare of colonialism.”<sup>46</sup>

Within this broad goal of advancing a technical *nahda*, the conference presentations emphasized the need for Arab engineers to lead development, housing, and standardization projects in their home countries.<sup>47</sup> Attendees called on government agencies and private companies across the region to refrain from hiring European experts except in essential cases.<sup>48</sup> Having observed the growing importance of the oil industry in the region, the conference’s organizing committee implored governments to employ Arab engineers to manage petroleum production.<sup>49</sup> According to this logic, nationalization alone was not enough to achieve and maintain the nation–state’s control over these critical industries. To harness the region’s fossil fuels while promoting a political project of Arab unification required remaking the composition of expert communities. Engineers had a distinct role to play in the creation of national territory, a space where the nation’s resources could be cataloged and controlled by loyal cadres rather than neocolonial corporations and foreign advisers.<sup>50</sup> In this vision, it was not only oil wells and mines that needed to be reclaimed but technical knowledge and the engineering profession itself.

Discussions at the conference about the profession’s role in ongoing struggles for formal independence were less overt. Although one Syrian official, Ahmad Sharabit, cited the liberation of Palestine and the Maghreb, the conference organizers were circumspect about including direct criticism of specific colonial policies.<sup>51</sup> French representatives in Damascus collected intelligence on al-Diyuri’s conference participation and cited a section of his speech in which he accused France of violating international treaties through its exploitation of Morocco’s mineral resources.<sup>52</sup> Seemingly at the behest of these French officials, the conference organizers would censor this portion of his talk in the final published report.<sup>53</sup> These intelligence sources also noted that al-Diyuri had met directly with President al-Quwatli and conveyed the sultan’s greetings. Writing back to the press in Morocco, al-Diyuri would claim that his detailed report on his country’s resources and infrastructural development had greatly impressed the local authorities.<sup>54</sup> Although it is difficult to gauge how al-Diyuri’s colleagues in the Mashriq perceived his portrayal of modernization in Morocco, France’s near total dominance over technical education and exclusion of Moroccans from the engineering profession distinguished his case from that of other attendees.

The perspectives endorsed by the Conference of Arab Engineers have echoes in the technical and cultural texts that al-Diyuri composed upon his return to Morocco (Fig. 1). Like his colleagues in Damascus, he embraced the notion of a technical *nahda*. Yet upon his return, al-Diyuri poured his efforts not into advocating for the creation of a national technical elite

<sup>44</sup> Tawfiq Ahmed ‘Abd al-Jawad, “al-Mu’tamar al-Handasi al-Thalatha,” *Majallat al-‘Imara* 7, no. 5–6 (1947): 5.

<sup>45</sup> Ibid.

<sup>46</sup> Cited in Sayyid Karim, ed., “al-Mu’tamar al-Handasi al-Thalatha,” *Majallat al-‘Imara* 7, no. 3–4 (1947): 42.

<sup>47</sup> Ibid., 43.

<sup>48</sup> ‘Abd al-Jawad, “al-Mu’tamar al-Handasi,” 16.

<sup>49</sup> Ibid., 15.

<sup>50</sup> On the techniques through which territory is materialized see Mitchell, *Rule of Experts*, 12.

<sup>51</sup> Note “Ingénieur marocain au Congrès des Ingénieurs Arabes,” attached to Serres, Ministre de France à Damas, to Ministre des Affaires Étrangères, 13 September 1947, 1MA/282/78, CADN.

<sup>52</sup> “Traduction d’un extrait de la communication faite par Abdel Salam Dyouiri au 3e Congrès des Ingénieurs Arabes tenu à Damas du 8 au 11 septembre 1947,” attached to Serres, Ministre de France à Damas, to Ministre des Affaires Étrangères, 13 September 1947, 1MA/282/78, CADN.

<sup>53</sup> Serres, Ministre de France à Damas, to Ministre des Affaires Étrangères, 3 October 1947, 1MA/282/78, CADN.

<sup>54</sup> “Le Maroc au Congrès des Ingénieurs Arabes de Damas,” *Le Petit marocain*, 2 February 1948, 1MA/282/78, CADN.



**Figure 1.** Al-Diyuri's passport photo at the time of his return to Morocco from Damascus. Attached to Serres, Ministre de France à Damas, to Ministre des Affaires Étrangères, 27 November 1947, IMA/282/78, Ministère de l'Europe et des Affaires Étrangères, Centre des Archives Diplomatiques de Nantes.

to replace French engineers but rather into projects aimed at cultivating generalized technical competencies among all Moroccans. After a series of professional setbacks, he would throw himself into nationalist politics and publishing—formulating a distinct perspective on how to create a technically literate public and a scientifically informed pathway to decolonization.

### Nationalism and Everyday Technology

Upon his return to Tetouan from Damascus in 1948, al-Diyuri claimed to carry a collection of documents, presumably signed by attendees at the conference, inviting young Tetouanis interested in becoming engineers to study in the Middle East.<sup>55</sup> He worked briefly as a radio specialist for RCA in Tangier but was fired after only a few months.<sup>56</sup> The engineer then began to pursue other commercial ventures—ones that put him in even closer contact with nationalists in the French zone. In 1949, he began traveling regularly to Casablanca, where he established a radio and electronics shop in *Derb Carlotti*—a bustling sector of Casablanca's New Madina.<sup>57</sup> This location would have put him in contact with the many factory workers and artisans who had settled in the neighborhood—two groups occupying the bottom rungs of the colonial sociotechnical hierarchy.

Around this time, al-Diyuri became active in the intellectual aspects of nationalist politics. He joined *al-'Alam*, the official newspaper of *Istiqlal*, as a regular correspondent. His

<sup>55</sup> "Abdessalm Diouri," one of a series of copied informational sheets located in a folder labeled "Notices Bibliographiques," undated, ca. 1953, IMA/282/78, CADN.

<sup>56</sup> His official dismissal was for "technical incompetence," but French officials speculated that it was actually a result of his limited language skills. *Consulat Général de France à Tanger to Chef du Cabinet Militaire Ambassade de France-Rabat* and others, "Additif au Bulletin de Renseignements," undated, ca. 1956, IMA/282/78, CADN.

<sup>57</sup> *Derb Carlotti* was one of the oldest neighborhoods in the New Madina, first built in the early 1920s through a mixture of municipal planning and spontaneous construction. The factory workers and local artisans that made up the majority of the neighborhood's residents lived in simple two-story dwellings, many of which had electrical connections by the late 1940s. Jean-Louis Miège, "La nouvelle médina de Casablanca. Le *derb Carlotti*," *Les Cahiers d'Outre-Mer* 6, no. 23 (1953): 247–48.

contributions to the paper covered a range of subjects, from electricity and engineering to psychology and meteorology. Taken together, these articles signaled his emerging interest in linking nationalist politics to the popularization of scientific and technical knowledge in Arabic throughout the two protectorates. His explicitly political pieces dealt with questions of decolonization and emphasized international solidarity in struggles for democracy and self-determination, from Palestine to Indonesia.<sup>58</sup> In a move that distinguished him from the paper's other contributors, however, he extended this commitment to democratization from the realm of formal political parties and nation-states to the acquisition of scientific and technical knowledge.

In one article, he argued that the values of the experimental sciences must be incorporated not only into schools but also into everyday life. For al-Diyuri, this was first and foremost a matter of adopting a "language" that could lead to independence and modernization:

[We] must by necessity recognize this truth if we want to shorten the path, and this truth is that scientific language has become an effective tool in every success. Just as every era has a language that gives expression to its spirit and its mores, and distinguishes by this language what it values, so the language of the 20th century is the language of science, this language published in our studies of the natural sciences, mathematics, electricity, mechanics, the sciences of life and the arts. . . . As long as we fail to facilitate the spread of these sciences to the younger generation, how can we anticipate development and advancement?<sup>59</sup>

The engineer suggested that incorporating experimental methods and scientific language into other domains—whether politics, economics, or urbanism—would help to distinguish real from illusory problems and offer a basis for collective action.<sup>60</sup> In another piece, he described how the encounter with new technologies born of the war had shifted horizons of expectation for what development could deliver. Mechanization, according to al-Diyuri, enabled new forms of consumption and produced new demands for energy. "Electricity is considered the gold of the era," he claimed—a prize pursued not only by industrialists but all those concerned with social issues.<sup>61</sup> Unlike the mineral, however, this "modern (gold)" had many sources—not only hydropower, coal, and oil, but also new forms of solar and geothermal energy.<sup>62</sup> For al-Diyuri the war had demonstrated to European nations the importance of individuals "specialized in the art of machines," whether mechanics or engineers.<sup>63</sup> Such "artists" would be essential for electrification projects in Moroccan cities. He wrote with a special admiration for educational experiments in recently independent Lebanon, where the Arts and Crafts School in Beirut had opened programs in civil, chemical, electrical, and mechanical engineering alongside instruction in building and fine arts.<sup>64</sup> Al-Diyuri was perhaps drawn to the notion of engineers, artisans, and artists training in the same institutions by his own experiences working alongside craft communities in *Derb Carlotti*.

In addition to educating skilled specialists in the country, al-Diyuri argued for the importance of cultivating a public that was educated in technical matters and adept at using machines. In one article about the conflict between modernity and tradition, he suggested that to bring about a transformation of customs and values, it was necessary "to understand the new through scientific, artistic, and rational innovations and to extend these [innovations] to those who are ignorant of them."<sup>65</sup> To this end, he offered his readers a method

<sup>58</sup> 'Abd al-Salam al-Diyuri, "Mawqif al-Dimuqratiyya min al-Amr al-Waqi'," *al-'Alam*, 7 February 1949, 2.

<sup>59</sup> 'Abd al-Salam al-Diyuri, "Ruh al-'Ilm wa Atharuhu fi al-Hayat," *al-'Alam*, 13 January 1950, 3.

<sup>60</sup> *Ibid.*

<sup>61</sup> 'Abd al-Salam al-Diyuri, "al-Tatawwar al-'Ali," *al-'Alam*, 27 November 1949, 3.

<sup>62</sup> *Ibid.*

<sup>63</sup> *Ibid.*

<sup>64</sup> 'Abd al-Salam al-Diyuri, "al-Ta'lim al-Rasmi bi Lubnan," *al-'Alam*, 25 November 1949, 3.

<sup>65</sup> 'Abd al-Salam al-Diyuri, "Sira' al-Qadim wa-l-Jadid," *al-'Alam*, 27 July 1949, 2.

for uncovering not only the inner workings of technical processes but also their broader implications. His approach—a veritable sociology of technology—involved demonstrating the link between the social effects and the material composition of new practices or devices. In an article on the use of glass to make exterior windows for storefronts and shops, for example, he described how this practice was reshaping social and economic behavior in Moroccan cities. As residents navigated the streets, glass windows enabled them to experience the urban landscape as a multitude of opportunities for consumption.<sup>66</sup> To grasp the extent of this shift, however, al-Diyuri argued that it was necessary to understand not only the role of shop windows as an urban technology but also the manufacture of glass as an industrial process, down to the very chemical composition of new varieties.<sup>67</sup> From sociological observations about the role of consumption in urban space, al-Diyuri shifted, within the same article, to a detailed analysis of the chemistry of industrially produced glass. In his conclusion, the engineer acknowledged that “some readers may find the examples of this information complex, [but] the reality is that these matters not only surround us in our everyday lives but [that] they do not exceed chemical principles that students learn in school.”<sup>68</sup> Hence the importance of field trips to local factories and laboratories where, he suggested, opportunities for direct observation could demystify the trappings of urban modernity for young Moroccan students.

The ease with which al-Diyuri traversed disparate fields and forms of knowledge gestured toward another striking feature of his work: the refusal to establish hierarchies between disciplines. Rather than positing certain sciences as the basis for others, he preferred to draw productive analogies—for example, relating mechanics to medicine in a piece comparing the operations of combustion engines to the process of combustion in living beings.<sup>69</sup> Here he juxtaposed the slow circulation of energy through cellular processes to the rapid release enabled by fossil fuels, prompting readers to imagine their bodies on the same continuum as industrial technologies. Another set of articles, on the practical amelioration of health and household hygiene, compared blood in the body to water vapor in a steam engine.<sup>70</sup> In one piece, al-Diyuri offered a recipe and instructions for making soap at home by mixing flour, oil, potash, and water, while suggesting the close connections between chemistry and craft.<sup>71</sup> Such pieces aimed to build on readers’ experiences with products and devices that had become mundane—demonstrating how an attunement to science and technology could improve everyday life. His interests extended to social reform and psychology, in articles where he insisted that resolutions to controversial issues were possible only once the populace had acquired the technical and scientific knowledge relevant to the subject at hand. He maintained this position in texts published on dream analysis, “modern” marriage, and the historical and political implications of nuclear armaments. These interventions suggested that an awareness of disciplinary developments could elucidate relations ranging from the familial to the geopolitical.<sup>72</sup>

The eclecticism of al-Diyuri’s work in *al-‘Alam*, his open-ended vision of knowledge and its acquisition, gave expression to a tension at the heart of Arab nationalist visions of modernization—a contradiction between challenging the colonial sociotechnical order and maintaining its underlying hierarchies. He supported the notion that a class of Moroccan professionals would be necessary in a postindependence future. Unlike the technical *nahda* envisioned by his colleagues in Egypt and Syria, however, al-Diyuri emphasized the

<sup>66</sup> ‘Abd al-Salam al-Diyuri, “Hadith al-Fatrina,” *al-‘Alam*, 17 July 1949, 3.

<sup>67</sup> *Ibid.*

<sup>68</sup> *Ibid.*

<sup>69</sup> ‘Abd al-Salam al-Diyuri, “al-Ihtiraq fi al-‘Alat wa fi al-Ka’inat al-Haya,” *al-‘Alam*, 20 April 1949, 3.

<sup>70</sup> ‘Abd al-Salam al-Diyuri, “Sa‘adat al-Insan fi Sihatih,” *al-‘Alam*, 10 April 1949, 3.

<sup>71</sup> ‘Abd al-Salam al-Diyuri, “Kayfa Tasna‘u al-Sabun fi Manzilik,” *al-‘Alam*, 28 October 1949, 3.

<sup>72</sup> ‘Abd al-Salam al-Diyuri, “Hadith al-Zawaj,” *al-‘Alam*, 27 February 1949, 2; ‘Abd al-Salam al-Diyuri, “al-Ahlam wa-l-Tahlil al-Nafsi,” *al-‘Alam*, 25 September 1949, 2; ‘Abd al-Salam al-Diyuri, “Hawla Sir al-Qunbula al-Dhariya,” *al-‘Alam*, 9 October 1949, 2; ‘Abd al-Salam al-Diyuri, “‘Ilm al-Nafs wa Atharuhu fi al-Hayat,” *al-‘Alam*, 23 December 1949, 3.

importance of diffusing technical knowledge more widely—linking development to quotidian experience through the popularization of scientific language and thereby “shortening the path” to independence and advancement.<sup>73</sup> As his engagement with Moroccan nationalism progressed, however, the engineer left the newspaper and directed his energies toward a new project—an ambitious publication that he described as a kind of methodological experiment. In founding *al-ʿUlum wa-l-Funun*, al-Diyuri attempted to move beyond paradigms of nationalist thinking that saw decolonizing scientific and technical knowledge as a matter of replacing European experts with Arab ones, and to enact an expansive vision that placed experimentation within reach of the wider public.

### Arts, Sciences, and Popularizing Technical Knowledge

In the early 1950s, al-Diyuri’s involvement with the nationalist movement intensified. In 1951, French officials in Tangier claimed that al-Diyuri possessed a large radio transmitter in his home in Tangier, which he operated under the orders of the nationalist leader Allal al-Fasi.<sup>74</sup> His peak involvement with the nationalist struggle coincided with the founding of *al-ʿUlum wa-l-Funun*, the publication that today serves as the clearest crystallization of his thought. In 1949, al-Diyuri would seek and receive authorization from the authorities in Tangier to begin publishing a literary and scientific journal.<sup>75</sup> From the publication’s first issue in 1951 until it was banned by the authorities in 1953, the engineer not only edited the journal but served as its most frequent contributor and one of its major distributors. During his trips to the French Zone, al-Diyuri’s radio shop in Casablanca would serve as a vehicle for circulating *al-ʿUlum wa-l-Funun* to other technically minded Moroccans in the area.<sup>76</sup>

As a popular periodical for diffusing general knowledge about the sciences and technology to an Arabic-speaking audience, *al-ʿUlum wa-l-Funun* entered a restrictive publication environment. Early in its history, the French Protectorate had enacted harsh restrictions on Arabic-language newspapers and forbade the importation of journals from Syria, Egypt, Tunisia, and Algeria.<sup>77</sup> Although printing the journal in the Tangier International Zone would have allowed al-Diyuri to escape some of these restrictions, circulation posed greater challenges—one of the reasons that the engineer carried copies of the journal with him across the border during his trips to the French Zone.<sup>78</sup> Although it is difficult to ascertain detailed information about the journal’s readership, the majority of the advertisements included in the publication were for businesses in either Tangier or Casablanca, but Fez, Tetouan, and Port Lyautey (Kenitra) also were represented—indicating that the journal circulated in the French and Spanish protectorates in addition to the international zone. In a summary of the publication’s first year, al-Diyuri hoped that the readership would continue to grow by a few hundred every month and mentioned receiving financial support for the project from a number of unexpected backers as well as interest among individuals who had helped to circulate or republish articles in France, South America, and Gabon.<sup>79</sup> The

<sup>73</sup> ‘Abd al-Salam al-Diyuri, “Ruh al-ʿIlm wa Atharuhu fi al-Hayat,” *al-ʿAlam*, 13 January 1950, 3.

<sup>74</sup> “Renseignements,” 22 October 1953, in folder labeled “Notices Bibliographiques,” 1MA/282/78, CADN.

<sup>75</sup> Al-Diyuri received authorization from the *mandūb* (the sultan’s representative in the Tangier International Zone) to publish the journal on 28 November 1949. Paul Hubert, Contrôleur des autorités chérifiennes de la zone de Tanger, to Directeur de l’Intérieur à Rabat, 2 February 1951, 1MA/282/78, CADN.

<sup>76</sup> ‘Abd al-Salam al-Diyuri to Secrétaire Général de la République Française au Maroc, 26 July 1953, 1MA/282/78, CADN.

<sup>77</sup> Hamza Tayebi, “Print Journalism in Morocco: From the Pre-Colonial Period to the Present Day,” *Mediterranean Journal of Social Sciences* 4, no. 6 (2013): 500; Miller, *History of Modern Morocco*, 124.

<sup>78</sup> ‘Abd al-Salam al-Diyuri to Secrétaire Général de la République Française au Maroc, 26 July 1953, 1MA/282/78, CADN.

<sup>79</sup> He mentions the “sacrifices” of students at an institute of sciences by correspondence and the work of the al-Manar theater troupe in Meknes. ‘Abd al-Salam al-Diyuri, “‘Intiha’ Marhala wa ‘Ibtida’ Ukhra,” *al-ʿUlum wa-l-Funun* 11 (1952): 1.

journal was printed on high-quality, durable paper, and every issue included numerous images, including photographs, as well as calligraphy—all indicators of a substantial budget.<sup>80</sup> The strength of al-Diyuri's professional network was reflected in the range of journal's contributors, which included scholars and writers from Egypt and Syria as well as Morocco. As a further sign of its importance, *al-'Ulum wa-l-Funun* boasted international distribution through the Orient Press International Federation (FIPO) in Switzerland. Also striking was the volume of advertisements in the journal for electronics vendors, mechanics, and repair shops—suggesting that the publication may have garnered special attention from craftspeople, tinkerers, and technologists.

As editor, al-Diyuri aimed to instill the journal with a “method,” an interdisciplinary approach to “publishing important studies on topics that are essential to us in our daily lives.”<sup>81</sup> In its first issue, he stated clearly that “modern science will not be useful unless we popularize it among other social classes, use it to serve the good, and attempt to search in good faith and humanely for solutions to the problems that present themselves.”<sup>82</sup> Although he insisted on the use of technical terminology in Arabic—introducing concepts such as the “ionosphere” (*al-ṭabaqa al-ayuniya*) in a piece about radio waves, for instance—the descriptions of these terms and the language of the articles themselves was exceedingly simple, free of literary flourish, and written to be understood by any reader with even basic literacy in Arabic.<sup>83</sup> With implicit reference to the work of decolonization, al-Diyuri observed that popularization, this diffusion of scientific precision throughout society, was essential to “resolve the problems that [we] encounter without recourse to outside aid.”<sup>84</sup> From the journal's first issue, however, he made clear that *al-'Ulum wa-l-Funun* was not simply a call for popularization. It was an instrument to achieve it. In one section of the introductory article, he imagined types of ideal readers for the publication: one subscriber who wished to learn “how to use the power of nature for his own interest,” another who saved on daily expenses to “purchase tools and chemical solutions that were mentioned in *al-'Ulum wa-l-Funun*,” as well as people interested in insect collecting, or women who wanted to apply scientific methods to domestic labor.<sup>85</sup> In each case, the journal itself was to serve as the vehicle for transmitting new scientific and technical knowledge to a broad spectrum of Moroccan society.

One aspect of this project—al-Diyuri's insistence that experimental methods be available to all Moroccans—was to clearly situate scientific and technological advancement within Arab and Islamic heritage. In language that echoed the Conference of Arab Engineers, the journal's second issue harkened back to a time when “Arabs were at the forefront of advanced nations, having recorded many discoveries in chemistry, nature, medicine, astrology, and geography.”<sup>86</sup> The drawing on the journal's cover showed a group of men in bedouin garb, examining the refraction of light in a pond (Fig. 2). The issue's first article, written by an engineer from al-Diyuri's alma mater in Cairo, presented a brief history of science—complete with the apocryphal account of Galileo Galilei dropping two spheres of different masses from the Tower of Pisa.<sup>87</sup> The article went on to describe how Galileo's defiance of Aristotelian dogma earned him the ridicule of his contemporaries but established him as a founder of experimental methods and modern scientific thought. Themes such as the

<sup>80</sup> The sale price of the journal fluctuated somewhat during its publication but remained low: between forty and fifty Moroccan francs. Each issue ranged between thirty and forty pages, including advertisements.

<sup>81</sup> ‘Abd al-Salam al-Diyuri, “Minhaj al-'Ulum wa-l-Funun,” *al-'Ulum wa-l-Funun* 1 (1951): 1.

<sup>82</sup> *Ibid.*, 4.

<sup>83</sup> In other words, although technical terms appeared in the journal, the sentence structure and other vocabulary were very simple and straightforward, not at all written in the style of literary Arabic. ‘Abd al-Salam al-Diyuri, “Atwal al-'Amwaj al-Lasilkiya,” *al-'Ulum Wa-l-Funun* 6-7 (1952): 11.

<sup>84</sup> *Ibid.*, 2.

<sup>85</sup> *Ibid.*, 3.

<sup>86</sup> “Surat al-Ghilaf,” *al-'Ulum wa-l-Funun* 2 (1951): title page.

<sup>87</sup> Maurice Malik, “Kayfa Ya‘mal al-'Uluma’,” *al-'Ulum wa-l-Funun* 2 (1951): 1-2.



**Figure 2.** “Surat al-Ghilaf,” cover photo, *al-‘Ulum wa-l-Funun* 2 (1951).

value of skepticism and the importance of breaking from established traditions colored the journal’s portrayal of scientific endeavors. At the same time, the issue’s introduction suggested that Arab thinkers belonged within this narrative of linear scientific progress.<sup>88</sup> Later issues also would include articles on the contributions of premodern polymaths like Ibn Sina (d. 1037) to scientific and technical developments in Europe.<sup>89</sup>

Other pieces explored the everyday uses of technologies that had become commonplace in Morocco by the postwar period. Al-Diyuri penned an article on the “art of photography” that presented a practical guide to operating cameras, developing film, and composing and coloring photographs.<sup>90</sup> Alongside a celebration of new visual technologies for their artistic potential, he elucidated the internal mechanisms of cameras, describing the use of magnesium in flash photography and the increasing shutter speed and precision of the new apparatus.<sup>91</sup> The

<sup>88</sup> “Surat al-Ghilaf,” title page.

<sup>89</sup> Muhammad Qashtilyu, “Turath al-Muslimun bi Shihb Jazira Ibiriya,” *al-‘Ulum wa-l-Funun* 3, no. 2 (1952): 6.

<sup>90</sup> ‘Abd al-Salam al-Diyuri, “Fann al-Taswir,” *al-‘Ulum wa-l-Funun* 2 (1951): 7.

<sup>91</sup> *Ibid.*, 8.

engineer emphasized that because these techniques had produced scientific advances in geography, geology, and medicine, photography was not simply an art, but a “vital art,” essential for the production of technical standards.<sup>92</sup> The same issue included a brief history of cinema; a guide to using antennae, complete with diagrams and technical descriptions; and an excerpt from the work of the Azhari scholar Ahmad al-Sharbasi on the concept of the soul (*nafs*) in the Qur’an.<sup>93</sup> Like the simplified, straightforward descriptions of the inner workings of devices like cameras, radios, and antennas, *al-‘Ulum wa-l-Funun’s* approach to Qur’anic exegesis was written to be accessible to all members of the literate public.

In many cases, articles in *al-‘Ulum wa-l-Funun* offered translations into Arabic of technical terminology that had come to permeate Moroccan cities during the interwar years. The piece on antennae, for instance, included the more commonly used French term *onde courte* (shortwave) in parenthesis alongside the Arabic neologism *al-mawja al-qaṣīra*.<sup>94</sup> Such translations were not simply a matter of introducing new technical concepts to Arabic speakers in Morocco. Readers would have encountered infrastructural technologies through colonial modernization projects, and the terms adopted to describe these projects came overwhelmingly from French. In this context, acts of translation were arguments for the adoption of new technical vocabularies in Arabic, not only in engineer communities but also in everyday life. Debates about whether technological terminology in Arabic could “catch up” and supplant colonial languages like French and English within engineering education programs would persist in the Arab world for decades to come.<sup>95</sup> *Al-‘Ulum wa-l-Funun* aimed to advance this project not for specialists but for the literate public as a whole. In a message to his readers at the beginning of one issue, al-Diyuri justified his decision to include admittedly complex scientific and technical vocabulary in the articles themselves. He suggested that “we are attempting to make *al-‘Ulum wa-l-Funun* into a modern school [*madrasa ‘aṣriya*] that will illuminate for the reader the path to the modern world.”<sup>96</sup> From “different machines” to “towering buildings,” the reader could not begin to grasp this modern world without “studying the sciences of mechanics, electricity, radio, television, agriculture, chemistry, the arts of drawing and photography, . . . , etc.”<sup>97</sup> He presented the journal as a kind of institution that was at once mobile, nationalist, and interdisciplinary.

Arabizing the language associated with colonial technologies was only part of the project of decolonization, and al-Diyuri engaged in novel editorial strategies for furthering the nationalist cause. During the first year of the publication, he began to structure individual issues around a single technology or theme with accompanying articles that dealt with its technical, historical, and political aspects. One striking example was an issue from September 1952 on radio and television broadcasting. A series of articles introduced readers to the history of Radio Tangier and news about the International Radio and Television Conference in Stockholm.<sup>98</sup> Alongside these pieces, al-Diyuri included a detailed description of wireless radio technology itself and a practical guide to using it—including a list of all the Arabic language broadcasters in the world and the wavelength of each station.<sup>99</sup> In this piece—uncredited but perhaps penned by the editor—the author cautioned readers that “it [is] possible for anyone who has a radio receiver to steal this transmission,” and that to send a wireless signal required a great deal of electrical power.<sup>100</sup> The French accusation

<sup>92</sup> *Ibid.*, 9.

<sup>93</sup> Ahmad al-Sharbasi, “al-Nafs fi al-Qur’an,” *al-‘Ulum wa-l-Funun* 2 (1951): 21–23.

<sup>94</sup> “Ma Hiya al-Antina,” *al-‘Ulum wa-l-Funun* 2 (1951): 13.

<sup>95</sup> Kettani, “Engineering Education,” 450.

<sup>96</sup> ‘Abd al-Salam al-Diyuri, “‘Ila al-Qari’,” *al-‘Ulum wa-l-Funun* 7 (1951): 1.

<sup>97</sup> *Ibid.*

<sup>98</sup> “Al-Idha‘at al-Hura bi Tanja,” *al-‘Ulum wa-l-Funun* 6–7 (1952): 1–4; “Mu‘tamar al-Idha‘a wa-l-Tilifziyun,” *al-‘Ulum wa-l-Funun* 6–7 (1952): 15.

<sup>99</sup> “Nuqta al-Itisal bi-l-‘Ard,” *al-‘Ulum wa-l-Funun* 6–7 (1952): 15; “Min al-Mikrufun ila Jihaz al-Istiqbal,” *al-‘Ulum wa-l-Funun* 6–7 (1952): 22.

<sup>100</sup> “Min al-Mikrufun,” 22.

that al-Diyuri himself was operating an illegal radio from Tangier under the orders of nationalist leaders at this time sheds a different light on these passages, which could be interpreted as subtle instructions for others attempting to avoid colonial censorship. Directly equipping readers with the technical skills necessary to access or even transmit anti-colonial broadcasts was just one of the ways that *al-Ulum wa-l-Funun* subtly advanced the project of decolonization, not only in discourse but in practice.

In a context where French claims of technological prowess and industrial development served as key arguments for the continuation of colonial rule, al-Diyuri found opportunities to level subtle critiques at the protectorate administration for its mismanagement of Morocco's resources. In a piece from November of 1951 on the hydrology of Morocco, he cited, for example, the continued dependency of the Roches Noires power station in Casablanca on coal imported from abroad.<sup>101</sup> To establish autonomy in the realm of industry, al-Diyuri, like his contemporaries at the Conference of Arab Engineers, envisioned the construction of dams to replace coal and oil power plants "that have caused numerous problems."<sup>102</sup> He observed that in spite of their technical inferiority, some already-existing dams in Morocco had increased their productive capacity at far greater rates than had occurred in France or the United States since the end of World War II.<sup>103</sup> In addition, al-Diyuri showed an appreciation for local land use practices and ecologies that contrasted with the narratives of environmental decline produced by colonial writers.<sup>104</sup> Arguing against French readings of local agricultural overexploitation, he suggested that "the Atlas [Mountains] are to Marrakesh what the Nile is to the territory of Egypt."<sup>105</sup> He noted that "in summer, water from the rains is sufficient for the purpose of irrigation . . . [some] lands depend on this natural irrigation due to the few dams that are [on their own] adequate for storing rainwater and water from snow that covers the Atlas Mountains year round."<sup>106</sup> He described how Moroccan cultivators adapted to the relative scarcity of water in North Africa by adopting crops that could grow from the end of the fall to the beginning of spring to avoid the heat of the summer when large quantities of water would be necessary to irrigate them.<sup>107</sup> To replace French visions of modernization, al-Diyuri imagined a productive national territory—simultaneously celebrating historical agricultural practices and new forms of technology.

Together these contributions reflected the scope of the journal's project: to revalorize the scientific and cultural achievements of the Arab world, to diffuse and popularize technical knowledge, and to imagine creative ways of furthering both decolonization and development in Morocco. In spite of its relatively short life span, *al-Ulum wa-l-Funun* served as a vehicle for al-Diyuri's vision of modernization as it circulated across the two protectorates and internationally while managing to escape, for a time, the attention of colonial censors. The journal's dissolution coincided with a new phase of the nationalist struggle. After the urban uprising and violent colonial reprisals that took place in Casablanca during December 1952, many of Istiqlal's leaders in the French Protectorate were arrested. In 1953, French representatives in Tangier would assert that al-Diyuri was secretly using the facilities of Anteo Press, where the journal was published, to print nationalist brochures about the 1952 uprising that were destined for distribution

<sup>101</sup> 'Abd al-Salam al-Diyuri, "al-Maghrib al-Jughrafi al-Hidruliki," *al-Ulum wa-l-Funun* 8 (1951): 21.

<sup>102</sup> Ibid.; 'Abd al-Jawad, "al-Mu'tamar al-Handasi," 15.

<sup>103</sup> Al-Diyuri, "al-Maghrib al-Jughrafi," 22.

<sup>104</sup> For an account of the formation and diffusion of colonial environmental declensionist narratives about North Africa see Diana K. Davis, *Resurrecting the Granary of Rome: Environmental History and French Colonial Expansion in North Africa* (Athens, OH: Ohio University Press, 2007).

<sup>105</sup> Al-Diyuri, "al-Maghrib al-Jughrafi," 20.

<sup>106</sup> Ibid.

<sup>107</sup> Ibid.

in the French Zone.<sup>108</sup> This accusation may have contributed to the banning of *al-Ulum wa-l-Funun* in late 1953.<sup>109</sup>

After the end of the protectorate in 1956, al-Diyuri would continue to work as a journalist and a teacher, and, according to the French consul in Tangier, he would design housing for local Moroccans.<sup>110</sup> In 1956, he temporarily held a position as a technical agent under M'hamed Douiri, who had been appointed the first Moroccan minister of public works during the transfer of power.<sup>111</sup> Douiri had followed a technical and political trajectory that was a kind of French colonial mirror image of al-Diyuri's formation in Egypt. Born to a modest Fasi family, M'hamed Douiri proved to be a brilliant student, winning a scholarship from the sultan to study at the École Polytechnique in Paris and then the École des Mines—an unprecedented feat for a Moroccan student at the time. Upon his return he rose through the ranks of Istiqlal, eventually marrying the daughter of the nationalist leader Ahmed Balafrej.<sup>112</sup> The fact that Douiri was rewarded after independence for his nationalist pedigree and technical competencies was at least partially a result of the fact that his French engineering credentials identified him as the kind of leader to which an independent Moroccan state would turn. Compared to Douiri's spectacular rise, al-Diyuri, with his Egyptian engineering degree, followed a relatively modest professional trajectory after independence. He worked as a math and science teacher in the 1960s and then again as a journalist—continuing to publish technical articles, although not at the frenetic pace of his years as the editor of *al-Ulum wa-l-Funun*.<sup>113</sup> In spite of his prominent role in nationalist publishing and organizing, al-Diyuri fell into relative obscurity after independence, to such an extent that a symposium organized in his honor in 2011 at the residence of the Egyptian ambassador in Rabat could claim to “dispel the darkness of marginalization and exclusion that shrouded the man, and [shake] off the dust of oblivion that had covered him for more than half a century.”<sup>114</sup> This event in 2011 signaled a long overdue recognition of al-Diyuri's cultural, organizational, and technical contributions during his long career. He died in Tangier in August of 2019 at the age of nearly a hundred.<sup>115</sup> In a postindependence context, where engineering education remained in French despite Arabization efforts and most prominent engineering institutions continued to rely on connections with the former metropole, al-Diyuri's technical training in Arabic and deep links to the engineering communities in the Mashriq seemingly provided no more opportunity for professional

<sup>108</sup> “Abdessalm Diouri,” one of a series of copied informational sheets located in a folder labeled “Notices Bibliographiques,” undated, ca. 1953, 1MA/282/78, CADN.

<sup>109</sup> A short contemporary article on al-Diyuri's biography suggests that the publication was banned due to an article in the journal that criticized the pasha Thami El Glaoui. Bawab al-Qasr al-Kabir, “al-Muhandis ‘Abd al-Salam al-Diyuri ila Dar al-Baqa’,” *Maghress*, 25 August 2019, <https://www.maghress.com/ksarforum/108966>.

<sup>110</sup> Consulat Général de France à Tanger to Chef du Cabinet Militaire Ambassade de France–Rabat and others, “Additif au Bulletin de Renseignements,” undated, ca. 1956, 1MA/282/78, CADN.

<sup>111</sup> *Ibid.*

<sup>112</sup> Marvine Howe, *Morocco: The Islamist Awakening and Other Challenges* (Oxford, UK: Oxford University Press, 2005), 79; Jillali El Adnani and Mohammed Kenbib, *Histoire du Maroc indépendant: Biographies politiques* (Rabat: Centre d'histoire du temps présent, 2015), 248–51.

<sup>113</sup> Al-Diyuri's life and activities become more difficult to trace after the end of the protectorate. A handful of contemporary press accounts mention him engaging in a variety of professional activities after 1956 and continuing to publish technical and scientific articles. “Sifara Misr Tahtafi bi Ruwad wa ‘Alam al-Qasr al-Kabir wa Tukarim al-Muhandis ‘Abd al-Salam al-Diyuri,” *Maghress*, republished from *Bawab al-Qasr al-Kabir*, 20 December 2011, <https://www.maghress.com/ksarforum/886>; “Al-Muhandis ‘Abd al-Salam al-Diyuri ila Dar al-Baqa’,” *Maghress*, 25 August 2019, <https://www.maghress.com/ksarforum/108966>.

<sup>114</sup> Al-Diyuri was celebrated as the first Moroccan to earn an Egyptian engineering degree. Abu al-Khayr al-Nasari, “al-Duktur Muhammad Ya‘ala: Takrim al-Diyuri Tanshit li-l-‘Alaqa Bayn al-Maghariba wa-l-Misriyyin,” *Maghress*, 26 January 2012, <https://www.maghress.com/ksarforum/993>.

<sup>115</sup> Bawab al-Qasr al-Kabir, “al-Muhandis ‘Abd al-Salam al-Diyuri ila Dar al-Baqa’,” *Maghress*, 25 August 2019, <https://www.maghress.com/ksarforum/108966>.

advancement than they had under the protectorate.<sup>116</sup> Likewise, his program for popularizing and expanding technical knowledge found few echoes among postcolonial officials, who either cemented ties with the French cadres who remained or advocated for the “Moroccanization” of those preexisting hierarchies. Al-Diyuri’s call for modernization as a bottom-up process of cultivating experimental values in everyday life would remain unanswered.

## Conclusion

During the height of his political and publishing activities from 1947–53, ‘Abd al-Salam al-Diyuri treated circulation as a method and a professional necessity. In the same way that his articles shifted between the corporeal and the machinic, the social and the scientific, the spiritual and the psychological, his travels between Maghrib and Mashriq, the French and Spanish protectorates, Tangier and Casablanca forged lines of connection that gestured toward alternatives to the modernization projects that would emerge in an independent Morocco. Al-Diyuri wrote, edited, published, and distributed written materials that aimed to create a technically literate and politically astute national public. Alongside this textual production he served as a representative of Morocco at international conferences, a repair worker, and a marginal engineer whose credentials allowed him to operate only in the interstices of the colonial economy.

Taken together, al-Diyuri’s publications and professional activities constituted an alternative project in a few senses. At a time when nationalists from the French zone like Allal al-Fassi or M’hamed Douiri spoke of an expert-led pathway to modernization in Morocco that could theoretically avoid the pitfalls of a “European” modernity, al-Diyuri took a different tack without directly challenging this position. He began from the assumption that science and technology—whose foundations were firmly rooted in Islamic history—had already transformed daily life for the majority of Moroccans. The challenge was calling his readers’ attention to the links between seemingly unrelated matters like chemistry and consumption and showing that the same method could be deployed to open up the inner workings of new devices and the spiritual and psychological constitution of individuals. Although he also emphasized formal education, al-Diyuri suggested that observation and the practical experience of encountering technology in everyday life was the ground upon which to build a technically skilled populace. Cultivating such a public was essential not only for confronting the complexity of the modern world but for challenging the claims of colonial authorities to hold the only keys to unlocking that world—keys such as scientific language and technical expertise, which al-Diyuri attempted to reclaim, demystify, and make available to his readers. The fact that he pursued this project outside of the institutional networks of the protectorate ultimately limited its influence after independence in 1956. Yet al-Diyuri’s continued importance lies in his singular effort to imagine and invent other possible pathways to modernization that placed the popularization of technical knowledge at the center of the struggle for decolonization.

Al-Diyuri recognized, unlike many of his colleagues from the Mashriq and his nationalist counterparts in Morocco, that the tension between modernization and decolonization could not be resolved simply by creating a local class of experts to replace European ones. Although he never referenced his own experience directly, al-Diyuri’s professional struggles following his return to Morocco with an Egyptian engineering degree may have shaped his perspective on expertise and credentialing. Did he notice that as long as European institutions and disciplines set the standard for what counted as relevant expertise, true decolonization would remain illusory? Did he predict that a class of postcolonial experts would

<sup>116</sup> For a discussion of the continued necessity of French for professional and educational advancement in a neoliberal economy see Charis Boutier, *Learning in Morocco: Language Politics and the Abandoned Educational Dream* (Bloomington, IN: Indiana University Press, 2016).

replicate or maintain the technical hierarchies and institutions of the colonial period? Did he realize, in other words, that technical knowledge and competency were never neutral and could not be divorced from the political question of who defines the legitimate sources and limits of that knowledge?

Although al-Diyuri did not frame the questions in these terms, he sketched their contours through his writing and editorial practices. His efforts to ground complex discussions of science and technology in what his readers already knew, to link mundane matters and sophisticated debates, to cross disciplinary boundaries and disconnected domains—these elements of his work point to a contradiction that he perceived at the root of both colonial and nationalist modernization projects. Without creating new pathways for communicating scientific and technical knowledge, anti-colonial efforts would remain dependent on the same expert communities that had long excluded Moroccans, including al-Diyuri himself. Such critiques are implicit in his description of *al-‘Ulum wa-l-Funun* as a “modern school”—an institution unlike any existing under the French and Spanish protectorates that would facilitate access to scientific and technical language for all inhabitants of the nation. For al-Diyuri, the desire for technology, like the desire for independence, was something that all Moroccans could enjoy. The two could have been, and still could be, one and the same.

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