Desert and Sown: A New Look at an Old Relationship

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Abstract
Though explicit pronouncements are difficult to find, the historical literature on the Middle East seems to be based on the assumption that the large desert areas contain societies and economic systems which are for the most part autonomous, but which occasionally impinge--sometimes with catastrophic results--on the lusher agricultural and urbanized areas. The deserts are designated by terms equivalent to "wilderness" and "area of insolence"; they are represented as areas controlled by nomads, who are by definition opposed to the settled life of cities and agricultural villages. The cities with their agricultural hinterland represent order and security, while the nomads stand for chaos. Finally, from time to time, the nomads erupt out of the desert and overrun the good land of the true believers.

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Though explicit pronouncements are difficult to find, the historical literature on the Middle East seems to be based on the assumption that the large desert areas contain societies and economic systems which are for the most part autonomous, but which occasionally impinge—sometimes with catastrophic results—on the lush agricultural and urbanized areas. The deserts are designated by terms equivalent to "wilderness" and "area of insolence"; they are represented as areas controlled by nomads, who are by definition opposed to the settled life of cities and agricultural villages. The cities with their agricultural hinterland represent order and security, while the nomads stand for chaos. Finally, from time to time, the nomads erupt out of the desert and overrun the good land of the true believers.

This orientation in the historical literature derives from two interrelated factors. First, it is a direct translation of the indigenous literature which was written in the cities. Second, Islamic history has until very recently been studied exclusively from within the academic tradition of Oriental Studies, whose implicit aim has been to interpret to the West what the East related about itself in its literature.

The increasing attention which has been paid to Ibn Khaldun over the last few decades has modified this orientation only to the extent that it introduced the concept of Casabiyya (group feeling) to our appreciation of social organization in the deserts. Toynbee, though at first he appears simply to be adding detail and analogy in his discussion of the factors which lead to nomadic eruptions, actually rejects the common unilateral explanations of climatic change or sedentary breakdown and stresses the need to investigate the systemic interrelationships between the two scenes of life, nomadic and sedentary.1 He is unable to fulfill this need himself, however, since he is limited once again by the bounds of his historical data. Finally, Gibb and Bowen offer a detailed rationalization of the traditional (city-oriented) view.2 For example, the statement
"the slow but relentless northward migration of the Anaza" is not only unexplained, but we are left to surmise that it is in the nature of things.\(^3\)

The northward migration of the Anaza in the eighteenth century is still not explained, and may be unexplainable in terms of historical evidence. However, if we approach the relationship between desert and sown from data which are not from the outset biased by virtue of their origin in the cities, and from a theoretical point of view which, instead of deriving from the ideology implicit in the data, focuses on systemic relationships within an objectively defined unit of study, we may hope to come to a more satisfactory evaluation of such migratory phenomena, whether or not we can explain them.

In this essay I start with my own ethnographic data from the Iranian deserts and outline a model of the economic and economic related processes and relationships which constitute the society of the Iranian deserts.\(^4\) This model may then be used as a working hypothesis in the study of other deserts at other times, insofar as they can be shown to contain similar variables and relationships. The model of the economy of the Iranian deserts may be projected back into the eighteenth century, not as history but as sociological context for the available historical data. One of the principal problems in the use of ethnographic analogy in the study of historical situations lies in the difficulty of assessing the influence of modern industrial technology. In the Iranian deserts such influence was minimal at the time of my study.

According to the thesis of this essay, deserts are marginal country. They are objectively less desirable because they cannot support populations as large or as dense as the territory around them. Despite what the proud Beduin or Tuareg may say, there is no objective evidence to suggest (what is, anyway, prima facie unlikely) that given a straightforward choice, a population will choose a desert environment rather than lush agricultural territory—whether or not the people are first occupationally specialized as pastoralists or agriculturalists.

The deserts may be marginal but they are there, and the communication networks generated by the cities must contend with them. Crossing the Sahara is similar to crossing the Mediterranean. Crossing the Gulf may be compared to crossing the deserts of the Iranian Plateau. Raiding is analogous to piracy. Oases are islands. (Only the pastoral sector of the nomad's economy has no equivalent on the sea, since fishing is based on the shore.) Deserts are inland seas which contain arterial
routes of communications and oases. The development of oases is a function of the arterial communications on the one hand and pressure of population or resources outside the deserts on the other. High mobility and sparseness of settlement generate insecurity, and security is one of the main preoccupations of desert life—for those who live within it as much as for those who travel through it. The dichotomy between desert and sown in the Middle East is real, and therefore analytically valid, only on the plane of the social identity of their respective populations. On the planes of economics and demography they are closely interdependent. Therefore, primary emphasis is given here to showing how population and subsistence in the deserts depend on the lusher agricultural peripheries and vice versa, and how the different and conflicting identities—peasant and nomad—which have disguised the economic interdependence in the historical record are generated. More briefly, I wish to show why the deserts cannot contain independent or autonomous economic systems.

For this purpose it is necessary to investigate the interdependence of certain variables, which for the present purpose may be grouped as factors of population, investment, the available or known technologies which may be used for subsistence or commercial purposes, and the natural environment or those aspects of it which are relevant to the technologies. There appears to have been no change in the range of available technologies since the introduction of the ganat (underground irrigation system), probably at the beginning of the first millennium. However, the key to the actual introduction and use of technologies in certain places at certain times lies not only in the local availability of resources—the effective environment—but in investment. Investment is encouraged by political security and demographic growth. The smaller the community the less it can expend on investment and maintenance. Different technologies require different levels of initial investment and maintenance per head of population. Certain types of agriculture in the deserts—particularlly those based on ganat irrigation—are investment-intensive and cannot be maintained independently by communities below a certain size. Others which are dependent on springs or lands may manage without outside investment, but are linked to towns or cities through a similar economic involvement in the network of communications and security.

The optimum population at any given location is determined by a combination of three factors: (1) how the investment is organized, (2) the manpower required by the technologies used for subsistence, and (3) the
annual return or carrying capacity. Since normal demographic processes never generate in both the short and the long term a population which will remain within the bounds of the optimum (which must itself also vary according to the vagaries of climate and disease) at each location, population movement or migration is inevitable. The pattern of movement may be expected to be similar to the pattern of communications and investment relationships. Both of these depend on external factors, that is, on the distribution of population and resources outside the deserts.

Our unit of study, therefore, is defined as the desert areas and neighboring centers of population. I discuss first the forms of activity within the deserts and then the ways in which they are linked with the population centers outside.

The population of the Iranian desert falls into three distinct types of social grouping, based on primary interest in oasis agriculture, pastoralism or mining. The distribution of population based on these subsistence technologies depends primarily on the distribution of (1) supplies of water which may be used for irrigation, (2) cultivable soil, (3) pasture, and (4) accessible ores.

 Though the amount of investment required with each technology changes with variations in the natural environment, pastoralism generally requires the least quantity. Apart from the acquisition of a minimum number of animals, the pastoralist requires access to pasture and water. Pasture in the Iranian deserts is generally of the type suitable for either goats or camels, and is generally limited to wadis and areas which receive runoff from a large catchment basin. Sand is a relatively unimportant source of pasture in the Iranian deserts, but since it is often important further west its essential properties must be mentioned here. Unlike the wadi and runoff pasture which is typical of the Iranian deserts, sand pasture is unpredictable because it depends on direct rainfall. Rainfall in the deserts is often extremely localized, and therefore elaborate scouting operations over vast areas are necessary to find the pasture it generates. For this reason, Arabian nomads may give the impression that they "follow the rains" according to the traditional stereotype of pastoral nomads, whereas in fact they simply have more latitude at certain phases of otherwise fixed annual cycles. However, this feature of the annual cycle of Arabian nomads may be significant in the present context. Although unfortunately there are no detailed studies to consult, we may hypothesize that such latitude in the search for small unpredictable localized
patches of pasture may lead to conflict on the borders of tribal territories and "migratory drift," or the gradual displacement of annual cycles of migration.  

For water there are three possibilities: springs and other surface sources, wells, or access to the water supplies of agricultural oases. Wells, since they require investment, are dug only when desirable pasture would be unusable without them. For this reason they are undesirable except when necessary because of the labor required to water animals from wells and because of the strategic disadvantage of making the investment of digging a well in a location which is not permanently settled. In the context of nomadic pastoralism particularly, wells (though often necessary for the reason given above, e.g. among the Beduin, Somali, and others) are in a sense contradictory to nomadism because they represent an improvement in the natural environment, in the form of an investment, by a population whose adaptation is essentially one of non-improvement and non-investment. For similar reasons nomads are not interested in the effects of overgrazing: having no vested interest in a particular piece of land, if one piece is overgrazed they move on to another. Investment tends to lead to the establishment of individual title to resources, which is also uncharacteristic of nomadic society. Pastoralism generally leads to a nomadic adaptation to the environment, since the flock (or herd) continually exhausts the pasture and must move on. In the desert the animals must move further to find the pasture they require than is the case on the lusher peripheries. If they improve their water resources, they develop their pastoralism in a non-nomadic direction, because they are creating an interest in fixed resources. More obviously, if they improve their pasture by using their water to sow and irrigate a fodder crop (e.g. alfalfa), they further modify their nomadism and may become sedentary pastoralists.  

It is implicit in the argument of this essay that nomadic pastoralism is in both the cultural and evolutionary senses secondary to and dependent upon agriculture. It may therefore be useful to include here a brief discussion of the origins of nomadism:  

Virtually nothing is yet known about the beginnings of nomadism . . . The evolutionary relationship between the domestication of grains and the beginning of agriculture on the one hand and the domestication of milch animals and their introduction into the traditional areas of nomadism on the other, is problematical. It would seem likely that there
was a significant increase in the exploitation of domesticated animals at a certain stage in the evolution of agriculture. It is argued that the evolutionary intensification of agriculture—the progressive shortening of fallow periods—allowed the spread of grasslands which are so essential for efficient animal husbandry. There is reason to suspect also that nomadic pastoralism evolved at least partially in response to a situation where the population grew faster than the agricultural harvest. There is evidence to suggest that from the beginning nomads were outcasts from settled societies. Early records from Mesopotamia and Egypt attest to conflict between settled agriculturalists on the rivers and nomads in the wilderness in the second and third millennia B.C. Neither in the ethnographic nor the historical record [from the Middle East] does any nomadic population appear which does not depend either directly or indirectly on the products of agriculture. Unlike the case of pristine hunters-gatherers, who knew no alternative subsistence technology, there is no evidence that nomadic populations ever practised pastoralism because they did not know how to cultivate. Nor did they choose this means of subsistence by cultural or ideological predisposition. As a general rule pastoral nomadism has been practised by populations which do not have access to the land, the capital, or other resources which would allow them to maintain a fixed residence. Where there have been exceptions to this rule they can be shown to be adaptive in other ways: for example, in northeast Persia where the Yomut Turkmen could have pursued their pastoralism efficiently enough from a fixed base but chose to remain nomadic in order to evade control and taxation by the Iranian Empire.

In many parts of the world populations which acquire the greater part of their subsistence from agriculture rely also to a greater or lesser extent on pastoralism. Though their agriculture is fixed, their flocks are obliged to practise transhumance in order to ensure maximum productivity. Therefore, although the population
as a whole is based on fixed agricultural resources, certain members of it are continually moving with a subsidiary set of its resources back and forth from winter to summer pastures. It is, therefore, relatively simple for any member of the society who is pushed out from the agricultural resources to develop the pastoral resources and so become nomadic. This argument suggests a model for the origin of nomadism in the transhumance of settled agriculturalists, and this thesis has recently been adopted in a reinvestigation of Indo-European origins.14

In southwest Asia, the Middle East and North Africa, and probably parts of Central Asia also, nomadism is most likely to have originated as an offshoot of agriculture.15 . . . A variation on this thesis has been proposed to account for the "beduinisation" of Arabia. According to Caskel the beduin population of Arabia evolved out of the collapse of the Arabian trading kingdoms ca. A.D.100, and gradually spread north and south throughout Arabia, as urban populations took to nomadism.16 Though this cannot be accepted as a total explanation, there is no doubt that periods of decline in urban society in various parts of the Middle East at various times have resulted in an increase in nomadic activity.

It is paradoxical that, despite the inferior rank and cultural dependence of nomadism on the city dominated and agriculture based sector of the society, not only have pre-Islamic Beduin cultural traits proved ineradicable among the Beduin (for example, animals are not inherited by women, and mahr [contractual terms promised by prospective husband] has not replaced bridewealth), but certain of them have been important in the development of Islamic culture (for example, the preference for marriage with the father's brother's daughter). The solution of the paradox, however, lies in two facts. One of these is historical and one sociological, but both derive from the specific ecological adaptation of Beduin life. First, the diffusion of certain Beduin culture traits among the agricultural and urban populations is a function of the military role of the Beduin in Islamic history, which is in turn a function of their adaptation. Second, those values that have been diffused derive from the basic corporate grouping of Beduin society, the hayy (basic Beduin social unit), which is similarly a function of their
adaptation.\(^\text{17}\) (It should be noted that Robertson Smith had already recognized the importance of the hayy and its composition and structure not only in Beduin but in "Semitic" culture as early as 1885.)

In agriculture, investment may be required for the construction of irrigation works, fields, and raising trees. Agriculture is possible only where a reliable supply of water may be led on to cultivable soil. This generally requires a significant level of investment in one or more of three forms: the construction of channels to lead the water from springs; the construction of a qanat;\(^\text{18}\) or the construction of bands (earth-works to contain runoff and erosion).\(^\text{19}\) It may be necessary to construct fields behind the bands by a form of terracing. Crops vary, but the emphasis is invariably on grain and—where there is not too much risk of frost in the winter—date palms. A good stand of date palms represents a considerable investment, since it generally takes a minimum of five years for the trees to come into production, but once in production they will produce large quantities of fruit for a hundred years and more with a minimum of labor.

Investment is also an important factor in the process of expansion and contraction of the society in conditions of population growth or decline. A new agricultural settlement must be started by an initial investment outlay from the expanding "mother" oasis, with which it will gradually develop from a colonial to an economically equal relationship. Only in this way can the initial investment be managed until the new community becomes viable. On the other hand, an expanding pastoral community may simply fission, each part taking its own animals.

With regard to mining, the historical situation is unclear. There are scattered deserted workings in the deserts, mainly of copper, lead and coal, but it has so far not been possible to date them. It is possible that established mining communities were rare until the present century, and that ores were worked only intermittently from the surface by people who relied mainly on other means of subsistence. In the present situation all mine workings depend entirely on direct investment from the cities, whether from the private or government sector—a situation which is likely to have arisen with the establishment of internal security and interest in the exploitation of mineral resources under Reza Shah Pahlavi in the 1930s. In the case of subsurface workings such investment is considerable (by the standards of the deserts), and moreover the working depends entirely on access to markets outside the deserts and the ability to pay cash wages. That is,
mining is the only non-subsistence occupation, and may therefore have been insignificant economically in the traditional situation (though mining has been an economically significant technology in Iran as a whole since the seventh millennium B.C.). The miners, therefore, are not tied to any investment, but it is already debatable whether they form part of the economic system of the deserts either today or formerly, since although they are still physically in the deserts they depend directly on the cities outside for their employment.

Apart from the ambiguous case of the miners and some sharecroppers in the larger oases, most people in the deserts inherit or make and maintain their own investment. However, in the deserts few people are specialized to the extent that they rely on one form of investment only. In general, the poorer the environment the broader the range of resources that are included in the annual subsistence cycle. Only relatively lush environments support economic specialization. Nomads in particular diversify their subsistence pattern as widely as possible. Since their primary expressed economic interest is in animals—the interest that causes them to adapt nomadically to their environment—they are more easily able by minor modifications of their annual cycle of movement to take in the exploitation of supplementary resources. Most commonly these take the form of date palm stands and various forms of symbiosis with oases. Whether or not the animals in fact produce the greater part of their annual diet and income, the nomads place a high ideological value on them because they function as a hedge against famine. If subsidiary resources fail they can always move on with their animals to fresh pastures, and in the last resort they can slaughter the animals. An important subsidiary resource for nomads used to be raiding, for which, because of their mobility, they were aptly suited. They also capitalized on such paramilitary expertise by taking up employment as mercenaries. 20 That such activities are no longer possible has played a large part in the general impoverishment of nomadic populations in the Middle East, which has similarly had a distorting effect on our view of the traditional nomad-peasant relationship.

In the oases, diversification takes the form of maximizing the range of different crops, and raising animals. In an extreme situation the agriculturalist may occasionally in bad years or slack seasons resort to taking on work in a mine. This usually represents the first step on the downhill road out of the subsistence economy of the deserts toward laboring or begging in
the cities. Economic activity within the deserts therefore consists primarily of pastoralism, agriculture and mining. The distribution of population involved in these activities depends not only on the distribution of exploitable resources within the deserts, but also on two factors which derive from the society beyond the confines of the deserts, security and communications. This is true especially on the relatively lush agricultural land which supports the plateau cities on the alluvial fans which slope down from the Zagros, the Alburz and the Hindu Kush towards the deserts.

Communications and security have always been complementary economic and political problems in the Middle East. The deserts of the Iranian plateau stand between the eastern and western halves of the Iranian cultural area. Communications across them have always been of great importance. Details of the major traditional routes are given in the travelers' accounts of all periods.21 To be maintained, a route across the deserts requires watering points and security. The fact that only very few caravanserais were ever built on the routes across the Iranian desert suggests, as might be expected, that security was always a major problem.22 Caravanserais represent a major investment which must be made from the cities. The next best type of facility is a network of water reservoirs (ab anbar) which are within the means of the local communities, and those were built and maintained on the major routes.23 Since pilgrimage was also an important incentive to travel across the deserts, religious motives played a part in encouraging the construction of ab anbar, many of which are waqf (religious endowment).

The local population encouraged traffic across the deserts because not only does it attract investment, it represents a further supplementary resource. Travelers buy supplies and services, and can often be charged exorbitant prices, since they are at the mercy of the local population. Although legal traffic was often hazardous, illegal traffic has always tended to thrive in the deserts. Raiding, brigandry and smuggling all depend primarily on the cities outside the deserts, but constitute important supplementary resources for a varying proportion of the internal population.

Finally, the native "map" of the deserts has some interesting features. There is no term or name for the deserts as a whole, either among the internal inhabitants or in the usage of the cities on the periphery. There are terms for empirically distinguishable types of desert, and there are names for areas within the deserts which are defined in terms of their exploitative value for the internal inhabitants. A third
taxonomy derives from the administrative centers on the periphery of the deserts and the political relationship between them. Theoretically, there is not a no man's land in the deserts. Every square mile falls within the administrative division of one or another of the cities on the periphery. (An exception to this statement is the town of Tabas, which is presently a full shahrestan [administrative unit within a province] administratively dependent only on the provincial center of Meshed.) Before the recent establishment of internal security, it was in the interests of each city to guard its back door against raiders. Therefore, every settlement within the deserts fell within the claimed sphere of influence of one or another of the cities.

If there is such a high degree of economic reciprocity, why the ideological polarization, the conflicting identities? It has been suggested that in every relationship of reciprocity there is latent hostility. Some aspects of the economic reciprocity between desert and sown are in fact explicitly hostile. The obvious historical explanation of this hostility—which is unfortunately not susceptible to proof—is that the population of the deserts was originally dispossessed from the richer agricultural land on the peripheries. A more satisfactory explanation is to see the opposing social and cultural identities as functions of the different forms of ecological adaptation.

Very briefly, the nomad is not tied to any individualized interest in fixed resources but relates to a total unimproved territory as a member of a group. Insofar as he is purely pastoralist, he shares a common identity with other pastoralists. For though other nomadic pastoralists may differ linguistically and may be in a feuding or even warring relationship, nevertheless they share certain basic features of economic or ecological adaptation from which are derived certain features of the social organization, and, most significantly, the fact that they have no interest in investment in or title to specific pieces of land.

Agriculturalists, on the other hand, whether in the deserts or outside, are by definition tied to a greater or lesser degree (according to the level of investment entailed) to interest in fixed resources, and therefore see their identity first and foremost, not as agriculturalists simply, but as agriculturalists based on those resources and as members of that village. This difference in use of territory by the nomadic pastoralist and the agriculturalist is so different as to be opposite. The nomad does not improve the natural environment and relates to it extensively and as a member
of a relatively homogenous group. The agriculturalist improves his habitat, and relates to it intensively as an individual as well as a member of a community. Such opposing types of territorial interest generate opposing ideologies, despite economic reciprocity between the respective populations. Moreover, individuals can still move back and forth between nomadism and agriculture, as the fluctuating local ratios of population over resources require. Every nomad knows how to cultivate, and every peasant knows how to herd and husband animals. When the individual ceases to be a nomad and member of a nomadic group, and becomes an agriculturalist and member of a village, the change in his economic interests and his social identity is reflected in his ideology.

However, this would lead us to expect an alliance between the agriculturalists inside and outside the deserts, against the nomads. After all, there is often an original investment relationship to form the basis of the tie. But here is where the distinction between relative specialization and diversification applies. There is a relatively strong ideological opposition between the (diversified) nomads and the (specialized) populations of agricultural centers outside the deserts. But inside the deserts both the oasis dwellers and the nomads diversify their economies as much as possible, and it is often only the balance of emphasis on agriculture or pastoralism that leads to a sedentary or nomadic adaptation. Whether or not the oasis dwellers receive investment from the cities, they must still maintain a symbiotic relationship with any neighboring nomads in the total multiresource economy of the deserts in order to subsist. If they were not to maintain that relationship, they would be at the mercy of the nomads' raids.

The traditional trichotomy among city, village and tribe is also ideological and is generated in a similar way. On the plane of economics and demography it does not exist. However, as a phenomenon, it found its way into the literature because it is an ideological trichotomy. It functions even in terms of the way a man in one niche in the society thinks about the rest of society. And because it is true at that level at least, it is an ethno-graphic datum which is important in any sociological analysis.

Not only is there economic reciprocity between these ideological poles, however, there must also be demographic movement. This is stated a priori, because fluctuations in the carrying capacity of each set of resources cannot possibly, in both the long term and the short term, remain in equilibrium with local processes
of demographic growth and decline. Nor does breakdown in the equilibrium always lead to direct conflict. Although there is little historical evidence of interchange of population between the three ideological categories (except perhaps during major periods of upheaval), the ethnographer continually comes across evidence which suggests that the interchange is continual. Barth, on the basis of studies of major nomadic groups outside the deserts, suggested three ways by which the interchange may be caused:

1. The birth rate among nomads tends to exceed that among agriculturalists.
2. Nomads who are too successful invest their excess animals in land, while those who are too unsuccessful are forced to hire themselves out to agriculturalists.
3. In periods of political upheaval the maintenance of irrigation and other agricultural engineering is allowed to lapse with the result that the carrying capacity falls drastically and (since most peasants keep a few animals) many are forced to move off with their animals into a nomadic adaptation, seeking supplementary resources (such as brigandage) to make up their subsistence.26

Barth's first two suggestions, which concern movement from the nomad into the peasant sector, though they may be true in certain cases, appear questionable as generalizations. There is insufficient evidence to prove differential population growth rates, and the economic conditions and media of exchange implied in the second hypothesis do not always obtain. But the third suggestion, which concerns movement in the other direction, is more promising because it is capable of generalization. On the basis of my own field data from the Iranian deserts I have constructed the following model of population movement resulting from changes in the ratio of population over resources within the unit of study:

1. The effects of injecting a population into the system from outside. For reasons which do not concern us here, a population moves into the system from outside. Large scale tribal invasions, such as those of the Seljuqs and the Mongols, also result in carnage; but since invasions disrupt investment and maintenance processes, they are also bound to increase the pressure of population on the resources.
2. Movement from cities to villages and villages to colonies generally, whether inside or outside the deserts, as a function of
economic investment and political land allotment.
3. Movement of individuals from villages to towns and cities for education, with a large proportion then remaining there. Each of the remaining types of movement represents a drop in economic status, forced by pressure of population on resources.
4. Movement from the peripheral agricultural areas into nomadism.
5. Movement from the peripheral agricultural areas into the oases.
6. Movement from oases into the mines.
7. Movement from the mines and, to some extent also, from oases and nomadism, into the city proletariats.

This model takes account only of migration, because unfortunately there are no reliable data on differential fertility and mortality rates.27 Although hard historical data are frustratingly scarce, and the range of ethnographic data at our disposal is as yet not satisfactory, nevertheless the foregoing should suffice to show that the traditional view of the place of the Iranian deserts, and by implication deserts elsewhere in the Middle East, in the history and economy of Middle Eastern society demands reinvestigation.