

**THE
EVOLUTION OF
CULTURE**

[ILLUSTRATED]

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CULTURE**

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BY

AUGUSTUS HENRY LANE-

FOX PITT RIVERS

ILLUSTRATED

BY

MURAT UKRAY

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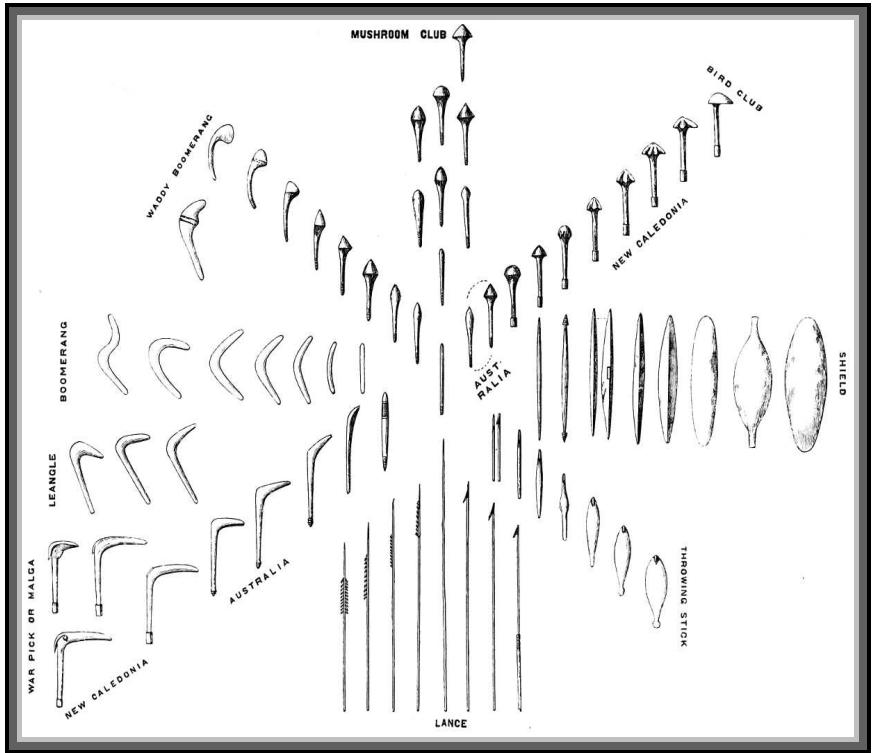
Table of Contents

CHAPTER

| | |
|-----------------------------------------------------------------------------------|------------|
| <i>THE EVOLUTION OF CULTURE [ILLUSTRATED]</i> _____ | 1 |
| <i>Table of Contents</i> _____ | 5 |
| <i>Preface</i> _____ | 9 |
| <i>Introduction</i> _____ | 10 |
| <i>Principles of Classification</i> _____ | 29 |
| <i>On the Evolution of Culture</i> _____ | 52 |
| <i>Evolution of Types On Ancient British Coins</i> _____ | 81 |
| <i>Ornamentation of New Ireland Paddles, Showing the Transition of Form</i> _____ | 82 |
| <i>Realistic Degeneration</i> _____ | 86 |
| <i>Primitive Warfare I</i> _____ | 88 |
| <i>Classification of the Weapons of Animals And Savages</i> _____ | 104 |
| <i>Defensive Weapons</i> _____ | 106 |
| <i>Offensive Weapons of Men and Animals</i> _____ | 120 |
| <i>Description of Plates VI-XI</i> _____ | 140 |
| <i>Primitive Warfare II</i> _____ | 154 |
| <i>General Remarks</i> _____ | 154 |
| <i>Combination of Tool And Weapon</i> _____ | 167 |
| <i>Transition From the Drift to the Celt Type</i> _____ | 170 |
| <i>Hafting</i> _____ | 179 |
| <i>Transition From Oval to Rectangular Forms</i> _____ | 181 |
| <i>Development of Spear And Arrow-Head Forms</i> _____ | 182 |

| | |
|------------------------------------------------------------------|------------|
| Development of Spear & Arrow-Head Forms | 184 |
| <i>Implements Composed of Perishable Materials</i> | 190 |
| <i>Transition From Celt to Paddle, Spear, And Sword Forms</i> | 191 |
| <i>Development of the Australian Boomerang</i> | 195 |
| <i>Indian Boomerangs</i> | 202 |
| <i>African Boomerangs</i> | 203 |
| <i>Cateia</i> | 207 |
| <i>General Conclusions Relative to the Boomerang</i> | 208 |
| <i>Development of the Club</i> | 208 |
| <i>Contrivances For Throwing the Spear</i> | 209 |
| <i>Transition From Club to Shield (Australia)</i> | 212 |
| <i>Transition From Club to Shield (Africa)</i> | 215 |
| <i>Development of the Shield</i> | 215 |
| Concluding Remarks | 217 |
| Primitive Warfare III | 223 |
| Development of Form In Celts of Copper, Bronze And Iron | 241 |
| Copper, Bronze, And Iron Celts | 263 |
| Celt Moulds | 274 |
| Early Modes of Navigation | 277 |
| Modes of Navigation | 279 |
| 1. <i>Solid Trunks And Dug-Out Canoes</i> | 280 |
| 2. <i>Vessels In Which the Planks Are Stitched to Each Other</i> | 289 |
| 3. <i>Bark Canoes</i> | 306 |
| 4. <i>Canoes of Wicker And Skin</i> | 309 |
| 5. <i>Rafts</i> | 314 |
| 6. <i>Outrigger-Canoes</i> | 316 |
| 7. <i>Rudders, Sails, And Other Contrivances</i> | 323 |
| Footnotes | 338 |

THE
EVOLUTION OF CULTURE
AND OTHER ESSAYS



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TWENTY-ONE PLATES

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Preface

These Essays, or rather Lectures, contain the first-fruits of the earliest systematic attempt to apply the theory of Evolution to the products of human handiwork. In their original form they have long been difficult to obtain; and they are reprinted now to supply the needs of candidates for the Oxford Diploma in Anthropology, and of the numerous visitors to the Pitt-Rivers Museum in Oxford. But they will certainly appeal to a far wider public also, as a brief and authentic statement of their author's discoveries.

The four Essays are reprinted substantially as they were first delivered and published. But verbal errors and actual misquotations have been corrected; and allusions to specimens or diagrams exhibited during the original discourses, but not published, have been replaced so far as possible by references to similar objects figured in the Plates.

The Plates are photographic reproductions of the original illustrations, with the exception of Plates V, XIII, XVII, XVIII. Of these, Plate XIII has simply been re-drawn, from a faded original; Plates XVII and XVIII have been translated, without loss of detail, from colours to monochrome shading; Plate V has been reconstituted from illustrations quoted in the text, with the permission of their publisher, Mr. Murray. Plate XXI is reproduced, by permission of Sir John Evans, from the paper which it illustrated originally.

The footnotes demand a word of explanation. The author, as the original publications show, was not precise in indicating his sources: he frequently gave, as a quotation, the general sense rather than the exact words of his authority; and occasionally his memory played him false. In the reprint, the precise references have been identified, and are given in full, and obvious errors in the text have been either

amended or corrected in a footnote. The editor desires to acknowledge much valuable help in the search for references from Miss C. M. Prior, of Headington.

Introduction

[1]

It was about the middle of last century that an officer in Her Majesty's Army began to apply the lessons which he had learnt in the course of some of his professional experimental work to studies pursued by him as a hobby in a far wider field of science. The story of the famous ethnographical collection of Colonel Lane Fox is well known, and I need but briefly refer to it. During his investigations, conducted with a view to ascertaining the best methods whereby the service firearms might be improved, at a time when the old Tower musket was being finally discarded, he was forcibly struck by the extremely gradual changes whereby improvements were effected. He observed that every noteworthy advancement in the efficiency, not only of the whole weapon, but also of every individual detail in its structure, was arrived at as a cumulative result of a succession of very slight modifications, each of which was but a trifling improvement upon the one immediately preceding it. Through noticing the unfailing regularity of this process of gradual *evolution* in the case of firearms, he was led to believe that the same principles must probably govern the development of the other arts, appliances, and ideas of mankind. With characteristic energy and scientific zeal Colonel Lane Fox began at once, in the year 1851, to illustrate his views and to put them to a practical test. He forthwith commenced to make the ethnological collection with which his name will always be associated, and which rapidly grew to large proportions under his

keen search for material which should illustrate and perhaps prove his theory of progress by evolution in the arts of mankind.

Although as a collector he was omnivorous, since every artefact product fell strictly within his range of inquiry, his collection, nevertheless, differed from the greater number of private ethnological collections, and even public ones of that day, inasmuch as it was built up *systematically* with a definite object in view. It is unnecessary for me to describe in detail the system which he adopted in arranging his collection. His principles are well known to ethnologists, either from the collection itself or from his writings, more especially from the series of lectures which he gave at the Royal United Service Institution, in the years 1867-9, upon 'Primitive Warfare'; from his paper read before the Anthropological Institute in 1874 on 'The Principles of Classification, as adopted in the arrangement of his Anthropological Collection', which was then exhibited at the Bethnal Green Museum; from that portion of the *catalogue raisonné* of his collection which was published in 1877; and from numerous other papers dealing with special illustrations of his theory. Suffice it to say that, in classifying his ethnological material, he adopted a *principal* system of groups into which objects of like form or function from all over the world were associated to form series, each of which illustrated as completely as possible the varieties under which a given art, industry, or appliance occurred. Within these main groups objects belonging to the same region were usually associated together in *local* sub-groups. And wherever amongst the implements or other objects exhibited in a given series there seemed to be suggested a *sequence of ideas*, shedding light upon the probable stages in the evolution of this particular class, these objects were specially brought into juxtaposition. This special grouping to illustrate sequence was particularly applied to objects from the same region as being, from their local relationships,

Evolution of Culture

calculated better to illustrate an actual continuity. As far as possible the seemingly more primitive and generalized forms—those simple types which usually approach most nearly to *natural* forms, or whose use is associated with primitive ideas—were placed at the beginning of each series, and the more complex and specialized forms were arranged towards the end.

The primary object of this method of classification by series was to demonstrate, either actually or hypothetically, the origin, development, and continuity of the material arts, and to illustrate the variations whereby the more complex and specialized forms belonging to the higher conditions of culture have been evolved by successive slight improvements from the simple, rudimentary, and generalized forms of a primitive culture.

The *earlier* stages in these sequence series were more especially the object of investigation, the later developments being in the greater number of cases omitted or merely suggested. It was necessary for Colonel Lane Fox to restrict the extent of the series, any one of which, if developed to the full extent, would easily have filled a good-sized museum. The earlier stages, moreover, were less familiar, and presented fewer complications. The general principles of his theory were as adequately demonstrated by the ruder appliances of uncivilized races as by the more elaborate products of peoples of higher culture; and, moreover, there was doubtless a great attraction in attacking that end of the development series which offered a prospect at least of finality, inasmuch as there was always a chance of discovering the absolute origin of a given series. Hence the major part of his collection consisted of specimens procured from savage and barbaric races, amongst whom the more rudimentary forms of appliances are for the most part to be found.

The validity of the general views of Colonel Lane Fox as to evolution in the material arts of Man was rapidly accepted by a large number of ethnologists and others, who were convinced by the arguments offered and the very striking evidence displayed in their support. I have heard people object to the use of the term 'evolution' in connexion with the development of human arts. To me the word appears to be eminently appropriate, and I think it would be exceedingly difficult to find one which better expresses the succession of extremely minute variations by means of which progress has been effected. That the successive individual units of improvement, which when linked together form the chain of advancement, *are* exceedingly small is a fact which any one can prove for himself if he will study *in detail* the growth of a modern so-called 'invention'. One reason why we are apt to overlook the greater number of stages in the growth of still living arts is that we are not as a rule privileged to watch behind the scenes. Of the numberless slight modifications, each but a trifling advance upon the last, it is but comparatively few which ever meet the eye of the public, which only sees the more important stages; those, that is to say, which present a sufficiently distinct advance upon that which has hitherto been in use to warrant their attracting attention, or, shall we say, having for a time a marketable value. The bulk of the links in the evolutionary chain disappear almost as soon as they are made, and are known to few, perhaps none, besides their inventors. Even where the history of some invention is recorded with the utmost care it is only the more prominent landmarks which receive notice; the multitude of trifling variations which have led up to them are not referred to, for, even if they be known, space forbids such elaborately detailed record. The smaller variations are, for the most part, utterly forgotten, their ephemeral existence and their slight individual influence upon the general progress being unrecorded at

the time, and lost sight of almost at once. The immediately succeeding stage claims for the moment the attention, and it again in its turn becomes the stepping-stone upon which the next raises itself, and so on.

Before proceeding further, let me give as briefly as I can an example of a development series worked out, in the main, upon the general line of inquiry inaugurated by Colonel Lane Fox. It is commonly accepted as a fact, which is borne out by tradition, both ancient and modern, that certain groups of stringed instruments of music must be referred for their origin to the bow of the archer. The actual historical record does not help us to come to a definite conclusion on this point, nor does the direct testimony of archaeology; but from other sources very suggestive evidence is forthcoming. A comparative study of the musical instruments of modern savage and barbaric peoples makes it very clear to one that the greater portion of the probable chain of sequences which led from the simple bows to highly specialized instruments of the harp family may be reconstructed from types still existing in use among living peoples, most of the well-defined early stages being represented in Africa at the present day[2]. The native of Damaraland, who possesses no stringed instrument proper, is in the habit of temporarily converting his ordinary shooting-bow into a musical instrument. For this purpose he ties a small thong loopwise round the bow and bow-string, so as to divide the latter into two vibrating parts of unequal length. When lightly struck with a small stick the tense string emits a couple of notes, which satisfy this primitive musician's humble cravings for purely rhythmic sound. Amongst many other African tribes we find a slight advance, in the form of special, rather slightly made bows constructed and used for musical purposes only. In order to increase the volume of sound, it is frequently the custom amongst some of the tribes to rest the bow

against some hollow, resonant body, such as an inverted pot or hollow gourd. In many parts again, we find that the instrument has been further improved by *attaching* a gourd to the bow, and thus providing it with a permanent resonating body. To achieve greater musical results, it would appear that somewhere in Africa (in the West, I suspect) two or more small bows were attached to a single gourd. I have, so far, been unable to trace this particular link in Africa itself, but, curiously enough, this very form has been obtained from Guiana. It may be thought that I am applying a breaking strain to the chain of evidence when I endeavour to work an instrument from South America into an African developmental series. But, when we recall the fact that evidence of the existence of *indigenous* stringed instruments of music in the New World has yet to be produced, coupled with the certain knowledge that a considerable number of varieties of musical instruments, stringed and otherwise, accompanied the enforced migration of African natives during the days of the slave trade, and were thus established in use and perpetuated in many parts of the New World, including the north-east regions of South America, we may, I think, admit, with some confidence, that, in this particular instance, from Guiana to Guinea is no very far cry, and that the more than probable African origin of this instrument from South America gives it a perfect claim to take its place in the African sequence. I still anticipate that this type of instrument will be forthcoming from some hinterland region in West Africa. Were *no* evidence at all forthcoming of such a form, either in past or present, we should be almost compelled to infer that such a one had existed, as this stage in the sequence appears to be necessary to prevent a break in the continuity of forms leading to what is apparently the next important stage, represented by a type of instrument common in West Africa, having five little bows, each carrying its string, all of which are fixed by their lower ends into a

Evolution of Culture

box-like wooden resonator. This method of attaching the bows to the now improved body of the instrument necessitates the lower attachment of the strings being transferred from the bows to the body, so that the bow-like form begins to disappear. The next improvement, of which there is evidence from existing types, consists in the substitution of a single, stouter, curved rod for the five little 'bows', all the five strings being serially attached to the upper end of the rod, their lower ends to the body as before. This instrument is somewhat rare now, and it may well be a source of wonder to us that it has survived at all (unless it be to assist the ethnologist), since it is an almost aggressively inefficient form, owing to the row of strings being brought into two different places at right angles to one another. The structure of this rude instrument gives it a quaintly composite appearance, suggesting that it is a banjo at one end and a harp at the other. This is due to the strings remaining, as in the preceding form, attached to the resonating body in a line disposed *transversely*, while the substitution of a single rod for the five 'bows' has necessitated the disposal of their upper attachments in a *longitudinal* series as regards the longer axis of the instrument. Inefficient though it be, this instrument occupies an important position in the apparent chain of evolution, leading on as it does through some intermediate types to a form in which the difficulty as regards the strings is overcome by attaching their *lower* ends in a longitudinal series, and so bringing them into the same plane throughout their length. In this shape the instrument has assumed a harp-like form—a rude and not very effective one, it is true, but it is none the less definitely a member of the harp family. The modern varieties of this type extend across Africa from west to east, and the harps of ancient Egypt, Assyria, Greece, and India were assuredly elaborations of this primitive form. The Indian form, closely resembling that of ancient Egypt, still survives in Burma,

while elsewhere we find a few apparently allied forms. In all these forms of the harp, from the rudest Central and West African types to the highly ornate and many-stringed examples of Egypt and the East, one point is especially noteworthy. This is the invariable *absence of the fore-pillar*, which in the modern harps of Western Europe is so important, nay, essential a structural feature. In spite of the skill and care exercised in the construction of some of the more elaborate forms, none were fitted with a fore-pillar, the result being that the frame across which the strings were stretched was always weak and disposed to yield more or less to the strain caused by the tension of the strings. This implied that, even when the strings were not unduly strained, the tightening up of one of them to raise its pitch necessarily caused a greater or less slackening of all the other strings, since the free end of the rod or 'neck' would tend to be drawn slightly towards the body of the instrument under the increased tension. The mere addition of a simple, strut-like support between the free end of the 'neck' and the 'body' would have obviated this difficulty and rendered the instrument relatively efficient and unyielding to varying tension. And yet, even in Western Europe, this seemingly obvious and invaluable addition did not appear, as far as I can ascertain, until about the seventh or eighth century A.D.; and even then it seems to have been added somewhat half-heartedly, and a very long time had yet to elapse before the fore-pillar became an integral part of the framework and was allotted its due proportion in the general design.

I have purposely selected this particular series for my illustration, not because it is something new—indeed, it is already more or less familiar, and, maybe, has even some merit in its lack of newness, since, in accordance with a popular dictum, it may urge a greater claim to be regarded as true—nor because it is specially striking, but rather for the reason that it illustrates suitably several of the points

upon which I wish briefly to touch. Even in the severely condensed form in which I have been obliged to present this series of developments from bow to harp, there is, I think, demonstrated the practical application of several of the general principles upon which is based the theory whereby Colonel Lane Fox sought to elucidate the phenomena of human progress.

A series of this kind serves, in the first place, to demonstrate that the absence of historical and archaeological evidence of the *actual* continuity in development from simple to complex does not preclude investigations into the early history of any product of human ingenuity, nor prevent the formation of a suggestive and plausible if largely hypothetical series, illustrating the probable chain of sequences along which some highly specialized form may be traced back link by link to its rudimentary prototypes, or even to its absolute origin, which in this particular instance is the ordinary shooting bow *temporarily* converted into a musical instrument. Where an actual chronological series is not forthcoming, a comparative study of such types as are available, even though they be *modern* examples, reveals the fact that, if classified according to their apparent morphological affinities, these types show a tendency to fall into line; the gap between the extreme forms—that is, the most simple and the most advanced—being filled by a succession of intermediate forms, more or less completely linked together, according to the number of varieties at our disposal. We are thus, at any rate, in possession of *a* sequence series. Is it unreasonable for us to conclude that this reflects, in great measure, *the* actual chronological sequence of variations through which in past times the evolutionary history of the instrument was effected, from the earliest rudimentary form?

It is difficult to account, at all, for the existence of many of the forms, such as I have briefly described, except on the supposition that they are *survivals* from more or less *early stages* in a series of progressive evolution; and, for myself, I do not believe that so inefficient and yet so elaborate an instrument, as, to take an example, the harp of ancient Egypt, Assyria, and India, could have come into being by any sudden inventive process, by ‘spontaneous generation’, as it were, to use a biological term; whereas, the innate conservatism of the human species, which is most manifest among the lower and more primitive races (I use the term conservatism, I need hardly say, in a non-political sense), amply accounts for such forms having been arrived at, since the rigid adherence to traditional types is a prevailing characteristic of human culture, and only admits of improvement by very slight and gradual variations upon existing forms. The difficulty experienced by man, in a primitive condition of culture, of emancipating himself from the ideas which have been handed down to him, except by a very gradual and lengthy process, causes him to exert somewhat blindly his efforts in the direction of progress, and often prevents his seeing very obvious improvements, even when they are seemingly forced upon his notice. For instance, the early Egyptian, Assyrian, and Greek harps, as I have already stated, were destitute of a fore-pillar, and this remained the case for centuries, in spite of their actually existing in an environment of other instruments, such as the lyre and *trigonon*, which in their rigid, unyielding frames possessed, and even paraded, the very feature which was so essential to the harp, to enable it to become a really efficient instrument. The same juxtaposition of similar types, without mutual influence, may be seen in modern Africa among ruder forms of these instruments.

And yet, in spite of instances such as this—where a valuable feature suggested by one instrument has not been adopted for the

Evolution of Culture

improvement of another, even though the two forms are in constant use side by side—we must recognize that progress, in the main, is effected by a process of bringing the experience gained in one direction to bear upon the results arrived at in another. This process of grafting one idea upon another, or, as we may call it, the hybridization of ideas and experience, is a factor in the advancement of culture whose influence cannot be overestimated. It is, in fact, the main secret of progress. In the animal world hybridization is liable to produce *sterile* offspring; in the world of ideas its results are usually far different. A fresh stimulus is imparted, which may last through generations of fruitful descendants. The *rate* at which progress is effected increases steadily with the growth of experience, whereby the number of ideas which may act and react upon one another is augmented.

It follows, as a corollary, that he who would trace out the phylogenetic history of any product of human industry will speedily discover that, if he aims at doing so *in detail*, he must be prepared for disappointments. The tangle is too involved to be completely unravelled. The sequence, strictly speaking, is not in the form of a simple chain, but rather in that of a highly complex *system* of chains. The time-honoured simile afforded by a river perhaps supplies the truest comparison. The course of the *main stream* of our evolution series may be fairly clear to us, even as far as to its principal source; we may even explore and study the general effect produced by the more important tributaries; but to investigate in detail the contributions afforded in present and past of the innumerable smaller streams, brooks, and runlets is clearly beyond any one's power, even supposing that the greater number had not changed their course at times, and even, in many cases, run dry. While we readily admit that important effects have been produced by these numberless tributary influences, both on the course and on the volume of the river, it is

clear that we must in general be content to follow the main stream. A careful study of the series of musical instruments, of which I gave but a scanty outline, reveals very clearly that numberless ideas borrowed from outside sources have been requisitioned, and have affected the course of development. In some cases one can see fairly clearly whence these ideas were derived, and even trace back in part their own phylogenetic history; but a complete analysis must of necessity remain beyond our powers and even our hopes.

It will have been observed that, in the example of a sequence series which I have given, the early developmental stages are illustrated entirely by instruments belonging to *modern savage races*. It was a fundamental principle in the general theory of Colonel Lane Fox that in the arts and customs of the still living savage and barbaric peoples there are reflected to a considerable extent the various strata of human culture in the past, and that it is possible to reconstruct in some degree the life and industries of Man in prehistoric times by a study of existing races in corresponding stages of civilization. His insistence upon the importance of bringing together and comparing the archaeological and ethnological material, in order that each might serve to throw light upon the other, has proved of value to both sciences. Himself a brilliant and far-seeing archaeologist as well as ethnologist, he was eminently capable of forming a conclusion upon this point, and he urged this view very strongly.

The Earth, as we know, is peopled with races of the most heterogeneous description, races in all stages of culture. Colonel Lane Fox argued that, making due allowance for possible instances of degradation from a higher condition, this heterogeneity could readily be explained by assuming that, while the progress of some races has received relatively little check, the culture development of

Evolution of Culture

other races has been retarded to a greater or less extent, and that we may see represented conditions of at least partially arrested development. In other words, he considered that in the various manifestations of culture among the less civilized peoples were to be seen more or less direct *survivals* from the earlier stages or strata of human evolution; vestiges of ancient conditions which have fallen out at different points and have been left behind in the general march of progress.

Taken together, the various living races of Man seem almost to form a kind of living genealogical tree, as it were, and it is as an epiphyte upon this tree that the comparative ethnologist largely thrives; while to the archaeologist it may also prove a tree of knowledge the fruit of which may be eaten with benefit rather than risk.

This certainly seems to be a legitimate assumption in a general way; but there are numerous factors which should be borne in mind when we endeavour to elucidate the past by means of the present. If the various gradations of culture exhibited by the condition of living races—the savage, the semi-civilized or barbaric, and the civilized races—could be regarded as accurately typifying the successive stages through which the higher forms of culture have been evolved in the course of the ages; if, in fact, the different modern races of mankind might be accepted as so many sections of the human race whose intellectual development has been arrested or retarded at various definite stages in the general progression, then we should have, to all intents and purposes, our genealogical tree in a very perfect state, and by its means we could reconstruct the past, and study with ease the steady growth of culture and handicrafts from the earliest simple germs, reflecting the mental condition of *primaeval* man, up to the highest manifestations of the most cultured races.

These ideal conditions are, however, far from being realized. Intellectual progress has not advanced along a single line, but, in its development, it has branched off in various directions, in accordance with varying environment; and the tracing of lines of connexion between different forms of culture, as is the case with the physical variations, is a matter of intricate complexity. Migrations, with the attendant climatic changes, change of food, and, in fact, of general environment, to say nothing of the crossing of different stocks, transmission of ideas from one people to another, and other factors, all tend to increase the tangle.

Although in certain instances savage tribes or races show obvious signs of having *degenerated* to some extent from conditions of a higher culturedom, this cannot be regarded as the general rule, and we must always bear in mind the seemingly paradoxical truth that degradation in the culture of the lower races is often, if not usually, the direct result of contact with peoples in a far higher state of civilization.

There can, I think, be little doubt that Colonel Lane Fox was well justified in urging the view that most savage races are in large measure strictly *primitive*, survivals from early conditions, the development of their ideas having from various causes remained practically stationary during a very considerable period of time. In the lower, though not degenerate, races signs of this are not wanting, and while few, possibly none, can be said to be absolutely in a condition of arrested development, their normal progress is at a slow, in most cases at a *very* slow, rate.

Perhaps the best example of a truly primitive race existing in recent times, of which we have any knowledge, was afforded by the native inhabitants of Tasmania. This race was still existing fifty years ago, and a few pure-blooded survivors remained as late as

Evolution of Culture

about the year 1870, when the race became extinct, the benign civilizing influence of enlightened Europeans having wiped this extremely interesting people off the face of the earth. The Australians, whom Colonel Lane Fox referred to as being ‘the lowest amongst the existing races of the world of whom we have any accurate knowledge’, are very far in advance of the Tasmanians, whose lowly state of culture conformed thoroughly with the characteristics of a truly primitive race, a survival not only from the Stone Age in general, but from almost the earliest beginnings of the Stone Age. The difference between the culture of the Tasmanians and that of the Australians was far greater than that which exists between man of the ‘River Drift’ period and his Neolithic successors. The objects of everyday use were but slight modifications of forms suggested by Nature, involving the exercise of merely the simplest mental processes. The stone implements were of the rudest manufacture, far inferior in workmanship to those made by Palaeolithic man; they were never ground or polished, never even fitted with handles, but were merely grasped in the hand. The *varieties* of implements were very *few in number*, each, no doubt, serving a number of purposes, the function varying with the requirements of the moment. They had no bows or other appliances for accelerating the flight of missiles, no pottery, no permanent dwellings; nor is there any evidence of a previous knowledge of such products of higher culture. They seem to represent a race which was isolated very early from contact with higher races; in fact, before they had developed more than the merest rudiments of culture—a race continuing to live under the most primitive conditions, from which they were never destined to emerge.

Between the Tasmanians, representing in their very low culture the one extreme, and the most civilized peoples at the other extreme, lie races exhibiting in a general way intermediate conditions of

advancement or retardation. If we are justified, as I think we are, in regarding the various grades of culture, observable among the more lowly of the still existing races of man, as representing to a considerable extent those vanished cultures which in their succession formed the different stages by which civilization emerged gradually from a low state, it surely becomes a very important duty for us to study with energy these living illustrations of early human history, in order that the archaeological record may be supplemented and rendered more complete. The material for this study is vanishing so fast with the spread of civilization that opportunities lost now will never be regained, and already even it is practically impossible to find native tribes which are wholly uncontaminated with the products, good or bad, of higher cultures.

The arts of living races help to elucidate what is obscure in those of prehistoric times by the process of reasoning from the known to the unknown. It is the work of the zoologist which enables the palaeontologist to reconstruct the forms of extinct animals from such fragmentary remains as have been preserved, and it is largely from the results of a comparative study of living forms and their habitats that he is able, in his descriptions, to equip the reconstructed types of a past fauna with environments suited to their structure, and to render more complete the picture of their mode of life.

In like manner, the work of the ethnologist can throw light upon the researches of the archaeologist; through it, broken sequences may be repaired, at least suggestively, and the interpretation of the true nature and use of objects of antiquity may frequently be rendered more sure. Colonel Lane Fox strongly advocated the application of the reasoning methods of biology to the study of the origin, phylogeny, and etionomics of the arts of mankind, and his

Evolution of Culture

own collection demonstrated that the products of human intelligence can conveniently be classified into families, genera, species, and varieties, and must be so grouped if their affinities and development are to be investigated.

It must not be supposed—although some people, through misapprehension of his methods, jumped at this erroneous conclusion—that he was unaware of the danger of possibly mistaking mere accidental resemblances for morphological affinities, and that he assumed that *because* two objects, perhaps from widely separated regions, appeared more or less identical in form, and possibly in use, they were necessarily to be considered as members of one phylogenetic group. On the contrary, in the grouping of his specimens according to their form and function, he was anxious to assist as far as possible in throwing light upon the question of the monogenesis or polygenesis of certain arts and appliances, and to discover whether they are exotic or indigenous in the regions in which they are now found, and, in fact, to distinguish between mere analogies and true homologies. If we accept the theory of the monogenesis of the human race, as most of us undoubtedly do, we must be prepared to admit that there prevails a condition of unity in the tendencies of the human mind to respond in a similar manner to similar stimuli. Like conditions beget like results; and thus instances of independent invention of similar objects are liable to arise. For this very reason, however, the arts and customs belonging to even widely separated peoples may, though apparently unrelated, help to elucidate some of the points in each other's history which remain obscure through lack of the evidence required to establish *local* continuity.

I think, moreover, that it will generally be allowed that cases of 'independent invention' of similar forms should be considered to

have established their claim to be regarded as such only after exhaustive inquiry has been made into the possibilities of the resemblances being due to actual relationship. There is the alternative method of assuming that, because two like objects are widely separated geographically, and because a line of connexion is not immediately obvious, therefore the resemblance existing between them is fortuitous, or merely the natural result of similar forms having been produced to meet similar needs. Premature conclusions in matters of this kind, though temptingly easy to form, are not in the true scientific spirit, and act as a check upon careful research, which, by investigating the case in its various possible aspects, is able either to prove or disprove what otherwise would be merely a hasty assumption. The association of similar forms into the same series has therefore a double significance. On the one hand, the sequence of related forms is brought out, and their geographical distribution illustrated, throwing light, not only upon the evolution of types, but also upon the interchange of ideas by transference from one people to another, and even upon the migration of races. On the other hand, instances in which two or more peoples have arrived independently at similar results are brought prominently forward, not merely as interesting coincidences, but also as evidence pointing to the phylogenetic unity of the human species, as exemplified by the tendency of human intelligence to evolve independently identical ideas where the conditions are themselves identical. Polygenesis in his inventions may probably be regarded as testimony in favour of the monogenesis of Man.

I have endeavoured in this review to dwell upon some of the main principles laid down by Colonel Lane Fox as a result of his special researches in the field of Ethnology, and my object has been twofold. First, to bear witness to the very great importance of his contribution to the scientific study of the arts of mankind and the

Evolution of Culture

development of culture in general, and to remind students of Anthropology of the debt which we owe to him, not only for the results of his very able investigations, but also for the stimulus which he imparted to research in some of the branches of this comprehensive science. Secondly, my object has been to reply to some criticisms offered in regard to points in the system of classification adopted in arranging his ethnographical collection. And, since such criticisms as have reached me have appeared to me to be founded mainly upon misinterpretation of this system, I have thought that I could meet them best by some sort of restatement of the principles involved.

It would be unreasonable to expect that his work should hold good in all details. The early illustrations of his theories were to be regarded as tentative rather than dogmatic, and in later life he recognized that many modifications in matters of detail were rendered necessary by new facts which had since come to light. The crystallization of solid facts out of a matrix which is necessarily partially volatile is a process requiring time. These minor errors and the fact of our not agreeing with all his details in no way invalidate the general principles which he urged, and we need but cast a cursory glance over recent ethnological literature to see how widely accepted these general principles are, and how they have formed the bases of, and furnished the inspiration for, a vast mass of research by ethnologists of all nations.

HENRY BALFOUR.

Principles of Classification

(1874)[3]

I gladly avail myself of the opportunity that has been afforded me of explaining the principles of classification that I have adopted in the arrangement of my collection, in the hopes that, by offering them to the consideration of anthropologists, their soundness may be put to the test, and that they may elicit criticism on the part of those who have devoted their attention to the subject of primitive culture.

The collection is divided into four parts. The first has reference to physical anthropology, and consists of a small collection of typical skulls and hair of races. This part of the collection, as it relates to a subject that has received a large amount of attention from anthropologists, and has been frequently treated by abler hands than mine, I do not propose to enter into. The remainder of the collection is devoted to objects illustrating the development of prehistoric and savage culture, and consists of—Part II. The weapons of existing savages. Part III. Miscellaneous arts of modern savages, including pottery and substitutes for pottery; modes of navigation, clothing, textile fabrics, and weaving; personal ornament; realistic art; conventionalized art; ornamentation; tools; household furniture; musical instruments; idols and religious emblems; specimens of the written character of races; horse furniture; money and substitutes for money; fire-arms; sundry smaller classes of objects, such as mirrors, spoons, combs, games, and a collection of implements of modern savages, arranged to illustrate the mode of hafting stone implements. Part IV refers to the prehistoric series, and consists of specimens of natural forms simulating artificial forms, for comparison with artificial forms; a collection of modern forgeries for comparison with

Evolution of Culture

genuine prehistoric implements; palaeolithic implements; neolithic implements; implements of bronze, iron, and bone.

The collection does not contain any considerable number of unique specimens, and has been collected during upwards of twenty years, not for the purpose of surprising any one, either by the beauty or value of the objects exhibited, but solely with a view to instruction. For this purpose ordinary and typical specimens, rather than rare objects, have been selected and arranged in sequence, so as to trace, as far as practicable, the succession of ideas by which the minds of men in a primitive condition of culture have progressed from the simple to the complex, and from the homogeneous to the heterogeneous.

Many ethnological museums exist in this country and elsewhere, and therefore, in claiming to have accomplished a useful purpose in forming this collection, I am bound to endeavour to show that it performs some function that is not performed by the majority of the other museums that are to be found. I propose, therefore, to consider, in the first place, what the defect of an ethnological museum usually is.

The classification of natural history specimens has long been a recognized necessity in the arrangement of every museum which professes to impart useful information, but ethnological specimens have not generally been thought capable of anything more than a geographical arrangement. This arises mainly from sociology not having until recently been recognized as a science, if indeed it can be said to be so regarded by the public generally at the present time. Travellers, as a rule, have not yet embraced the idea, and consequently the specimens in our museums, not having been systematically collected, cannot be scientifically arranged. They consist of miscellaneous objects brought home as reminiscences of

travel, or of such as have been most easily procured by sailors at the seaports. Unlike natural history specimens, which have for years past been selected with a view to variety, affinity, and sequence, these ethnological *curiosities*, as they have been termed, have been chosen without any regard to their history or psychology, and, although they would be none the less valuable for having been collected without influence from the bias of preconceived theories, yet, not being supposed capable of any scientific interpretation, they have not been obtained in sufficient number or variety to render classification possible.

This does not apply with the same force to collections of prehistoric objects, which during the last ten or fifteen years have received better treatment. It is to the arts and implements of modern savages that my remarks chiefly relate.

Since the year 1852 I have endeavoured to supply this want by selecting from amongst the commoner class of objects which have been brought to this country those which appeared to show connexion of form. Whenever missing links have been found they have been added to the collection, and the result has been to establish, however imperfectly, sequence in several series.

The primary arrangement has been by form—that is to say, that the spears, bows, clubs, and other objects above mentioned, have each been placed by themselves in distinct classes. Within each there is a sub-class for special localities, and in each of these sub-classes, or wherever a connexion of ideas can be traced, the specimens have been arranged according to their affinities, the simpler on the left and the successive improvements in line to the right of them. This arrangement has been varied to suit the form of the room, or of the screens, or the number of specimens, but in all cases the object kept in view has been, as far as possible, to trace the succession of ideas.

Evolution of Culture

This is the distinctive difference between my collection and most others which I have seen, in which the primary arrangement has been geographical, that is to say, all the arts of the same tribe or nation have been placed together in one class, and within this there may perhaps have been in some cases a sub-class for special arts or special forms. Both systems have their advantages and disadvantages. By a geographical or racial arrangement the general culture of each distinct race is made the prominent feature of the collection, and it is therefore more strictly *ethnological*, whereas in the arrangement which I have adopted, the development of specific ideas and their transmission from one people to another, or from one locality to another, is made more apparent, and it is therefore of greater *sociological* value. Different points of interest are brought to light by each, and, in my judgement, a great National Anthropological Collection, should we ever possess such a desideratum, can never be considered complete until it embraces two series, arranged upon these two distinct systems.

Following the orthodox scientific principle of reasoning from the known to the unknown, I have commenced my descriptive catalogue with the specimens of the arts of existing savages, and have employed them, as far as possible, to illustrate the relics of primaeval men, none of which, except those constructed of the more imperishable materials, such as flint and stone, have survived to our time. All the implements of primaeval man that were of decomposable materials have disappeared, and can be replaced only in imagination by studying those of his nearest congener, the modern savage.

This being the system adopted, one of the first points to which I desire to invite your attention is the question, to what extent the modern savage truly represents primaeval man, or rather to what

extent may we take the arts of modern savages to represent those of the first progenitors of our species?

In order to do this it is necessary to view the question in its psychological aspects. This I shall touch upon as lightly as possible, avoiding all technicalities, which in a cursory view of the matter, might tend to confuse, and confining myself to those parts of the subject which appear to have a direct bearing on evolution.

It is a matter of common observation that animals act by instinct, that is to say, that in the construction of their habitations and other arrangements for providing for their wants, they act intuitively, and apparently without the intervention of reason; and that the things which they construct, though often of a more or less complex character, are usually of a fixed type; that they are repeated by nearly all animals of the same kind with but little variety; and that within the limited space of time during which we are able to observe them, they do not appear to be susceptible of progress, although evidence has been adduced to show that animals, even in a wild state, do change their habits to a certain extent with the change of external conditions.

On the other hand, we recognize in many animals the operation of a reasoning mind. In their efforts to escape, or when conditions of a novel character are presented to them, they act in a manner that shows clear evidence of intelligence, although they show this to a very limited extent as compared with man. We also know that habits acquired by animals during domestication, or taught them by the exercise of their reasoning faculties, become instinctive in them, and are inherited in their offspring, as in the familiar case of the pointer dog. We also know that under domestication animals lose the instincts acquired in a wild state.

Evolution of Culture

In the human mind we recognize the presence of all these phenomena, only in a different degree. We are conscious of an intellectual mind capable of reasoning upon unfamiliar occurrences, and of an automaton mind capable of acting intuitively in certain matters without effort of the will or consciousness. And we know that habits acquired by the exercise of conscious reason, by constant habit, become automatic, and then they no longer require the exercise of conscious reason to direct the actions, as they did at first; as, for example, the habit of walking upright, which the child learns with pain and labour, but in time performs without conscious effort of the mind. Or the habit of reading and writing, the learning of which requires a strong and continuous effort of the intellect, but which in time becomes so completely automatic that it becomes possible to read a whole page aloud whilst the intellectual mind is conscious of being engaged in other things.

We perceive clearly that this automatic action of the brain is dependent on frequent repetition by the intellectual brain, as in the familiar case of learning by heart; and also that the transfer of the action from the intellectual to the automaton brain—if indeed there are separate portions of the brain allotted to these separate functions, as appears probable—is a gradual and not a sudden process, and that there are intermediate stages in which an action may be performed partly by direction of the intellect and partly automatically. This is shown in the case of a person who, wishing to make an effective speech at a public meeting, reasons out his address carefully, and then learns it partially by heart. When the time comes to address the assembly, the speech having been partly referred to the automaton brain, the intellect is relieved from action, and, being unoccupied, is apt to wander and engage itself in other matters that are passing at the time; but the automaton brain, being insufficiently prepared to bear the whole responsibility, is unable to continue, and the

intellectual brain, having already started on a journey elsewhere, is unable to return quick enough to take up the thread of the discourse. The result is that the would-be orator breaks down pitifully in the middle of his speech, owing to his having learnt his lesson too well for one function of his mind, and not well enough for the other. The same is seen in many business transactions, which, from frequent repetition, become what is called a second nature, and in the conduct of which the conscious intellect is partly freed from the control of the actions.

We see also that both automatic and intellectual activity are inherited in different degrees by different persons. Thus it is a matter of common observation that there are some persons who are able to acquire with great facility the power of conversing upon simple subjects in many different languages, whilst upon more complex subjects, requiring intellectual effort, they never acquire the power of conversing in any language. Thus, also, it is frequently seen that some children show a remarkable aptitude for learning in their youth. It is said to be a pleasure to educate them; everything speedily becomes automatic in them; great hopes are entertained of their future prospects; but they frequently become a grievous disappointment to their parents, who have built castles in the air upon the strength of their apparent precocity, whereas an acute observer might have seen that they had never from the first showed signs of great intellectual capacity. On the other hand, we hear of dunces who are the despair of their tutors, who can with difficulty be taught to read and write and spell, but in after years become philosophers and scientists, all which might have been foretold from the first if the system of education had been such as to call forth the intellectual powers.

Evolution of Culture

It is not merely that some inherit automatic capacity whilst in others the capacity is intellectual. There is, without doubt, in both cases an hereditary capacity for special things. Thus, whilst some acquire a knowledge of music with facility, others can never be made to appreciate a note of music, and so with respect to other arts.

How then are we to account for this innate indifference in the capacity of individuals, unless by supposing it to be proportioned to the length of time during which, or the degree of intensity with which, the ancestors of the individuals have had their minds occupied in the particular branch of culture for which capacity is shown? Unfortunately the difficulty of tracing the channel of hereditary transmission stands in the way of obtaining any certainty on this point, although the labours of our Vice-President, Mr. Galton, have already thrown much light on this interesting subject. But on this assumption, it is easy to account for the more perfect action of instinct in the lower animals than in men, when it is considered that the minds of their progenitors must have been confined to the experience of those particular things for which instinct is shown, far longer than is the case with man; and this brings us to the point which has an important bearing upon the question before us, viz. that every action which is now performed by instinct, has at some former period in the history of the species been the result of conscious experience.

But, in adopting this theory, it is not necessary to assume that the ideas themselves have been communicated by hereditary transmission. The doctrine of innate ideas, exploded by Locke, I believe, can never again establish itself. What is inherited is no doubt a certain organization of the nervous system, which, by repeated use through many generations, aided by natural selection, has become exquisitely adapted to the recognition of experience of a