

MATERIAL CULTURE WITHIN SOCIETY

[TECHNIQUES, TASKS, AND SOCIETY]

How details of practice are necessary to understand the repartition of tasks
between members of a society

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The study of material culture is as old as anthropology itself, if not older. It goes at least as far back as the age of Enlightenment, in the 18th century. My purpose here is not to retrace this history but to stress the fact that from somewhere in the late 19th century, a general misunderstanding seems to have created a wider and wider gap between sociology and technology. The meaning of *sociology* does not need to be explained since everybody understands it the same way. The meaning of *technology* does, since it has changed with time and still differs somewhat from one group of users to another. The word *technology* was first coined in the 19th century to name a science (still to come) aiming at analysing or improving techniques. This meaning was soon taken over by anthropologists to name the branch of their discipline dealing with material culture, and it is still understood that way by some of them in France today. But generally, and especially in English-speaking countries, this original meaning has fallen into disuse since at least the beginning of the 20th century. The consequence is that there is no word left to denote the branch of anthropology dealing with techniques, so that the branch itself has lost much of its initial visibility.

Sociologists claim to be studying society as a whole, a claim that is basically sound. The problem is that they are not faithful to their claim, insofar as most of them ignore techniques, as if techniques were not social facts at all. On the other hand, technologists take for granted that techniques are social facts, but they are too few and far between to be really audible. The result is a pretty general misunderstanding, even if there are some hopeful exceptions.¹

¹ For two such recent and very bright exceptions by English-speaking authors, see R. Sennett, *The Craftsman*, Yale U.P., 2008, and M. B. Crawford, *Shop class as soul craft*, Penguin Press, 2009.

I have no precise idea about how it could be possible to improve this state of things, especially from the sociologists' point of view. But I think that the perspectives are somewhat better on the side of the technologists, if only because most of them are aware of the problem. What we need is a way of showing that a better knowledge of material culture can lead to fundamental changes in our understanding of society at large. With the proviso that to achieve this result, theoretical demonstrations are less helpful than concrete examples. In this paper, I shall try to propose a few such examples. Of course, I am aware that many other examples would have been possible, including better or more useful ones. But the only examples I am able to submit to your attention are those that I have had the opportunity to come by in the course of my own studies, mainly on agriculture and related activities.

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The first three examples I thought of are ordinary ways to use the hand (or hands), so ordinary or commonplace, in fact, that they are practically ignored. These are: (a) the *jointée*, or the use of both hands joined together to take grain or similar materials; (b) *érussage*, a mode of harvesting tree-leaves or the grains of some cereals; and (c) the use of the fists to hit at something or somebody.

Jointée.- I use this French word because I have not been able to find an exact equivalent in English – although most other languages seem to have one. Properly speaking, the *jointée* is a unit of measure: the quantity of grain hold within both hands joined together in the form of a cup. But it may also be used to mean the gesture of using both hands in a similar manner for picking, lifting, digging out or drawing up any convenient material (grains, sand, loose earth, water...). As far as I know, this gesture is universal among humans, but is has not been observed among other primates. Of course, these two assertions are provisional, they remain to confirmed by further investigations. But in the present state of things (or of minds), we may have to wait quite a bit of time for those investigations. I am personally of the opinion that the *jointée* is one of the basic patterns of action that distinguish humans from apes, but I must admit that the data to support this opinion are not available.

Érussage.- This word is not to be found in most French dictionaries, because it belongs to a few dialects of western France only, where the use of tree-leaves as feed for animals was more important than in other parts of the country. There are several

methods for harvesting tree-leaves. The most frequent is of course to cut the twigs with a billhook. But another one is to strip the twigs of their leaves by pinching them, so to speak, between the fingers: it was to this method that the word *érussage* was applied. In France, *érussage* proper was not done for anything else than the harvesting of tree-leaves. However, the shelling (separating the grains from the stalks) of plants like flax, hemp, millet, etc. could be done in a similar way with the help of a fixed iron pincher through which the stalks were drawn. And in other parts of the world, the practice of stripping the stalks of cereals to separate the ears or grains are or were quite common. I shall not go into further details here, if only because many areas of southeast Asia and Japan are concerned, about which I am less competent than many of you. My point here is that *érussage*, like the *jointée*, is a very simple pattern of using one's hands, so simple indeed that it is all but impossible to think of any group of humans where it would be totally absent². Now, is it so simple as to be practised by apes as well? I does not seem to be so, although once again, I must admit that I do not know whether there are data supporting this opinion.

Uses of the fist.- This third example differs from the others, because the idea that the fist has been one of the primitive tools of humans has been made popular by the German philosopher Ernst Kapp a long time ago (1877). Kapp's theory (*Organprojektion*, organic projection) was that the first tools had been "projections" of bodily organs outside, and that, for example, the percussion tools (hammerstones, etc.) had been "projections" of the fist. This theory ought to have led to extensive investigations on the use of fists among humans (especially children) and apes, but it has not, so that we have no better data on fist use than on the *jointée* or *érussage*.

But there is a difference. There are pretty good reasons to suppose that gestures such as *jointée* and *érussage* are universal among humans, which is not the case with the fist. For either as a tool or as a weapon, the fist is much too fragile to really efficient. As a tool, it can only be used in tasks such as kneading dough or moist clay. As a weapon, it cannot be used in real fights, only for fun, sport, or shows. In ancient Rome, there were athletes especially trained for boxing, *pugiles*, but they did not fight barehanded, their fists were enveloped by *cestus*, leather bands reinforced with pieces of lead or iron. In modern England, boxing was first practised with bare

² Arctic peoples could be an exception, insofar as they have no plants worth harvesting in their environment. But it does not mean that they never have any other opportunity to use their hands that way for other purposes.

fists, but when it became a regular sport discipline, somewhere in the late 19th century, the use of gloves became compulsory. So that all in all, the time length during which the fists were really used bare in modern England cannot have been more than one or two centuries.

And outside England proper, fighting with fists was nowhere a matter of course. In a little-known short novel written in the 1820s, *The Two Drovers*, Walter Scott tells the story of two friends, one English, the other Scottish, who entered a quarrel. But when the Englishman proposed to his friend that they settle the matter with their bare fists, the Scotsman indignantly refused, because for him, fighting barehanded would be as shameful as going about naked, as only savages or animals do. It is quite probable that Walter Scott took this story from a real *fait divers* that occurred in the second half of the 18th century, although his source has not been found. But it is significant that at a time when boxing with bare fists was a new and raging fashion in England, it was still unthinkable in neighbouring Scotland. It would not be wise to draw definite conclusions from this one example, but it must at least be admitted that Kapp's theory is not supported by it. Rather, the available evidence points the other way: the fist was not a model for true tools, it was used at most as a rather poor substitute for them

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The second set of examples I want to discuss now is taken from very common agricultural practices: the sowing and harvesting of cereals.

There are three main techniques for sowing by hand: dibbling, sowing in rows or drilling, and broadcast sowing; to which I would like to add a fourth: "smallcast sowing", which I shall explain presently.

Dibbling — making small holes and dropping one or a few seeds therein — is or was practised everywhere. The only implement required, provided the soil is not too hard or too difficult, is a pointed stick.

Drilling requires a more important tool-kit, for digging and covering up the furrows into which the seeds are to be regularly dropped. These tasks can be executed with hand tools, but more usually with an ard or plough drawn by animals, and there are good reasons to think that the invention of the ard in Mesopotamia in the 4th millennium B.C. had something to do with sowing in rows. What is certain is that by

the 1st millennium B.C., some ards were equipped with a kind of funnel into which someone walking beside it dropped the seeds in order to let them fall down regularly into the furrow just behind the share. Such sowing-ards or drill-ards have been in use until quite recently (and still are, perhaps) from Yemen and Syria in the West to India in the East. In China, they went a step further by adding a box over the funnel, which transformed the sowing-ard into a genuine sowing-machine. The whole story has been so excellently told by Francesca Bray (1984) that more details are not necessary here. The only point that I want to add is that if we look closely at what the first ards were used for, we are led to the possibility that they were not used for “ploughing”, as we understand it today, but for sowing — especially sowing in rows.

On *broadcast sowing*, a preliminary remark is that contrary to the others, this sowing technique has become a symbol, even a religious one (in the New Testament for example). And since the Middle Ages, it has been the subject of innumerable drawings, paintings and sculptures by European artists. The main reason for this is probably that the gesture itself looks so grand and generous. But another one may be that broadcast sowing was a difficult and prestigious task, requiring well-trained specialists. For seeds were to be cast as uniformly as possible, notwithstanding the changes in the force or direction of the winds, the irregularities of the fields, etc. Moreover, the sower had to adapt his movements to the quantity of seeds to be sown, which could vary from one to three or four per unit of surface. All that required a high degree of precision and self-control. In addition, broadcast sowing meant walking for hours on ploughed land carrying a bag of seeds weighting something like 30 kg when full. In sum, broadcast sowing was one of the most skilled and strenuous tasks of pre-industrial agricultures. A task that must have required much training, although I have not found data on how long it took to learn the job thoroughly.

Now, this job was a men’s task: I know of no evidence whatever showing women sowing broadcast (in the true sense of the term). Is it because it was so skilled and strenuous that men only were thought able to do it? Possibly, but there is no lack of skilled and strenuous tasks that are done by women. In my opinion, there must be something else, and that something must be the kind of training involved. Many tasks can be learnt just by doing, because even beginners can obtain results, even if it is clumsily at first; they will improve by practice. But other tasks cannot be performed by beginners, because they are dangerous, the materials are too costly, or for some other reason. A specific period of training is necessary, during which the novice exerts

himself but not in “real” conditions.³ I think it was typically the case with broadcast sowing, for nobody could afford to waste seed or to have a field badly sown. Broadcast sowing was too important to be left to unskilled people. Which means that the sower had to train long enough before being entrusted with the real task. Once again, I must say that I have no real data to present in support of this hypothesis. But I cannot think of any other reason why broadcast sowing would be so universally a men’s job. Training was a men’s affair, into which women had no possibility to interfere.

What led me to this hypothesis is a comparison with “*smallcast*” sowing. As its name indicates, broadcast sowing was broad, the breadth of the cast being from two to eight meters. Which implied that the fields were ploughed flat. But in many areas of France (and of western Europe), fields were not ploughed flat, but in ridges and furrows. The whole process was complex, much too complex to be described here (see Bourrigaud & Sigaut 2007). Suffice it to say that the ridges were usually from 0,80 to 1,20 cm broad, and that the furrows between them should remain empty, so that each ridge had to be sown as a separate unit. There is no specific name for this sowing technique, which is the reason why I choose to call it “smallcast”. My point is that usually, this smallcast sowing was done by women. It was a skilled job too, not much less skilled than broadcast sowing probably. But the gestures were different, and the mode of training must have been different too.

Broadcast sowing is a technique of the body. No tool is involved in the action itself, except a bag for containing the seeds. But it is obvious that such a technique is not simple and cannot be primitive; it requires indeed much more training and skill than many tool-using techniques. As far as I know, broadcast sowing was currently practised in the West only, that is in Europe, the Mediterranean and the Near East; elsewhere, it was either unknown or exceptional. Exceptions can be very interesting because being different from the usual practices of the surrounding country, they are often more easy to explain. With broadcast sowing, however, an additional problem may be that it may be difficult to distinguish it from practices which look more or less the same, but are really different. Just walking along by throwing seed is not broadcast sowing; otherwise, there would be no way to differentiate smallcast from broadcast sowing and no chance to understand why women do the sowing here and men there.

³ As in fencing for instance, where people learn to wield swords or other weapons in conditions such as to make impossible to maim or kill each other.

The second example I want to discuss here is harvesting. But whereas the catalogue of sowing techniques is rather simple (four items), the catalogue of harvesting techniques is more complex. Hence the following table, where all the harvesting techniques I was able to find out are summarized. There are nine families or lineages of such techniques, each one being identified by crossing two criteria: what exactly is harvested, and how it is harvested.

IDENTIFICATION TABLE OF CEREAL HARVESTING TECHNIQUES					
(2) HOW IT IS HARVESTED	(1) WHAT IS HARVESTED				
	Whole plants	Grains, spikelets	Ears, panicles	Handfuls of stalks	More than handfuls
Uprooting, pulling out (<i>arracher</i>)	1				
Picking up (<i>ramasser</i>)		2			
Beating (<i>battre</i>)		3			
Stripping (<i>érosser</i>)		4	5		
Breaking, plucking (<i>briser, cueillir</i>)			6		
Breaking/cutting (by pressure only)			7		
Cutting (by friction)				8	
Cutting (with a slashing motion)					9

For example, if what is harvested is the whole plant, the technique will be to uproot it by pulling it out (case n° 1). On the other hand, if only the seeds are wanted, one of the laziest ways to get them is to wait until they have fallen down at maturity and then to gather them with broomsticks, rakes, etc., or just with bare hands (case n° 2), etc. From n° 1 to n° 6, all the techniques can be practised either without tools or with very simple ones. A more specialized tool appears in of case n° 7 with the

“harvesting knife”, well-known in many parts of East and Southeast Asia, but also in West Africa, which is used to harvest ears of some cereals (rice and millet mainly) one by one. But the harvesting knife proper is not the only tool used for that purpose. In many cases, harvesting ears is done with small, ordinary knives, or even without any tool, the ears being half cut half broken with a fingernail. This use of fingernails is of course infrequent, but the mere fact that it exists (it has been observed by H. Conklin among the Hanunoo) is important as another example of an organ of the body used like a tool. Moreover, the use of a kind of cutting ring or thimble put onto the finger, as an artificial fingernail, has also been described in some parts of Indonesia.⁴

The harvesting knife works by pressure, each ear-carrying stalk being cut, or rather broken, by pressing it transversally against the edge of the blade. With technique n° 8, stalks are cut, not one by one but many together, that is handful by handful. Now, handfuls cannot be half cut half broken by pressure alone; they have to be cut in the stricter sense of the term, that is, by a combination of pressure and friction. And friction requires a minimum length of the blade, which is what defines the sickle. The blades of harvesting knives are rarely more than 10 cm long. The blade of “true” sickles are rarely less than 15 cm, and may be much longer, the maximum being in the order of 100 cm. Which sets at once another question: is it possible that tools so different in size are the same ?

Once more, explaining the difference is a matter of gestures. Harvesting handfuls means two successive operations: (1) *grasping* a handful of ears (with the left hand, for right-handed people), and (2) *cutting* it with one movement of the sickle (held in the right hand). As far as these two operations only are involved, sickle-blades do not need to be very long, and this is the case in most of East Asia where, as far as I know, blades are, say, between 15 and 30 cm long. There may be exceptions, but they seem pretty rare and can usually be explained by external factors, such as the use of the sickle for other purposes than harvesting cereals.

What gave me the clue was to have seen broadcast-sown fields in Algeria in the early 1970s. I am not sure that broadcast-sown fields can still be seen anywhere today, except perhaps in a few isolated areas. But the most proper way to describe them is to say that they are a mess. Cereals dibbled or sown in rows tend to grow into well-ordered individual tufts that are comparatively easy to grasp one after the other,

⁴ Notably by H.T. Fischer, “Reispflücken und Reisschneiden in Indonesia”, *Internationales Archiv für Ethnographie*, 1937, 34, pp. 83-105.

especially when the person works near the ground. If they have been sown broadcast, on the contrary, they grow in such disorder that grasping handfuls becomes difficult, especially when the person works at the height of her knees or higher. The solution that has been found was to gather the stalks with the sickle itself, used as a hook, before grasping them. In the latter case, harvesting includes, not two successive operations, but three: (1) *gathering* with the sickle the stalks to be grasped, (2) *grasping* them, and (3) *cutting* them (as before). And the sickle has now not one function (cutting) but two (gathering plus cutting).

But as can be easily understood, short-bladed sickles are not convenient for gathering. They have to be made longer, and there are two ways to do it. In some parts of eastern Asia (of Thailand, Cambodia, North Vietnam and South China) where, although for other reasons than being broadcast-sown, the stalks are also to be gathered before being grasped, the part of the sickle that is lengthened and incurved to be used as a gathering hook is the handle, the blade itself remains short. In the West, it is the blade that is made long enough — at least 40 cm — and properly incurved to be used as a hook. And its length depends, not only on the strength or dexterity of its users, but on the sparseness of the plants. To my knowledge, the longest sickle-blades are to be found, not in rich and fertile areas, but in semi-arid ones, where the plants are most distant from each other.

In a way, it would not be absurd to say that short-bladed and long-bladed sickles are different tools. For their difference is not only quantitative (a matter of more or less efficiency), it is qualitative: short-bladed sickles have one function, cutting, whereas long-bladed ones have two, gathering and cutting. And this functional difference is mainly connected with sowing techniques (broadcast or not). Which is roughly confirmed by their geographical distribution: broadcast sowing and long-bladed sickles are features common to Europe, the Mediterranean countries and West Asia.

With that conclusion, the topic is far from being exhausted. Many other things would have to be taken into account for a full understanding of sickles and ways to use them throughout the world. I shall stop here, except to make a last point that is, I think, of some importance.

Harvesting techniques from n° 1 to n° 6 make use, if at all, of “simple” tools, that is, of tools that anybody can make for himself (or a husband for his wife) at will. Even harvesting knives (n° 7) fall into this category, because they do not absolutely

require a metallic blade. Of course, modern harvesting knives have all iron blades, since for many centuries iron has been the best and most easily available material. But harvesting knives can also work with blades of stone, of shell or of any wood hard enough to resist wear. That is not the case with sickles. I won't deny the existence of prehistoric "sickles" with blades of bronze or stone (that is, with a cutting edge made of a number of stones inserted into a piece of wood or bone, etc.). But we have no means to know what those "sickles" were really used for and how, or in other words to decide if they were really sickles. Observing microscopic wear marks did not provide definite answers, and ethnographic parallels are lacking, because nothing like a true sickle has ever been observed among peoples without metals of America and Oceania. So that if we want to stick to the facts, we must admit that there is no incontrovertible evidence of sickles without iron blades. The implication is that "true" sickles require specialists (blacksmiths) to be manufactured; in that sense, they are not "simple" tools.

All these details have consequences, especially on the repartition of tasks between men and women. When done with techniques n° 1 to 7, harvesting is usually a women's task, although men can join them in case of need, which is frequent. With the sickle (n° 8), the rules become more strict, at least in the cases where I could find relevant information. They can be formalized as follows: (1) when women do the harvesting with sickles, men are either absent or in charge of making and carrying the sheaves; (2) when men do the harvesting with sickles, women are either absent or in charge with making the sheaves, etc. But there is never any mixing up, except when working teams are reduced to the members of one family. In Most of India, but also in northern Europe (including a large northern part of France), rule (1) prevails; in southern Europe, in most Mediterranean and near-eastern countries, rule (2) prevails. (I have not been able to found out which rules prevailed in eastern Asia). In other words, the sickle has a gender: it is either a women's tool or a men's tool, not both.

After the sickle, the next tools of the table, n° 9, are used with a slashing movement. They are of two kinds, according to whether they are wielded with one hand or both. *Bagging hooks* (in French *volants*) are wielded with one hand, *scythes* proper with both. To the casual observer, bagging hooks look like large sickles and are often summarily described as such, which is a complete mistake. Peasants themselves never do that mistake: in the regions where both tools are present, they have two different names for them. With the scythe, this confusion is not possible,

because scythes look very different from sickles. There are several kinds of scythes too, but a complete description would be well beyond the limits of this paper. I have only two last remarks to add, in line with what I have just said about sickles.

First, bagging hooks and scythes are emphatically men's tools. This is not to say that women cannot use them. They do sometimes, in case of need; they did for instance during World War I, when in many rural regions of France, all men were in the army except invalids and old-timers. But in normal, ordinary conditions, bagging hooks and scythes belong to men.

Second, bagging hooks and especially scythes are masterpieces of metallurgy, because of the qualities they must have: the blade must be long and thin but rigid, with an edge of hard steel to be sharp enough, and a back of soft iron to resist shocks, etc. In Europe, the manufacture of scythe blades was not in the hand of ordinary blacksmiths, it was a specialized industry restricted to a few small areas of Austria, Germany, Sweden and England. Village blacksmiths could repair scythes (up to a point), they could not make them. When the revolutionary government of France declared war to Austria in the late 18th century, there was a problem because all the scythe blades used in France came from Austria, and an Austrian embargo on such a strategic tool would have disastrous consequences. So, French governments made every efforts to have a scythe-making industry installed in the country, efforts which took nearly a half century to get results.

So, like sowing techniques, harvesting techniques show a gradation in skills and tools. But the most interesting thing is less the gradation itself, perhaps, than the way it is connected with facts like specialisation, training and the repartition of tasks between men and women.. The are "simple" skills, which can be acquired just by doing, without special preparation or training, and there are "simple" tools, that can be made by about anybody in a short time. Such simple techniques can be practised by everyone; but they are usually the share of women (and children), although men can join them when required by circumstances. On the other hand, there are elaborated or developed techniques, which require either a special training (e.g. broadcast sowing) or a special tool, or both (mowing with a scythe). In those cases, the rules are more rigid and the repartition of tasks more strict. As I see it, the very old debate on the repartition of activities between men and women should take such factors into consideration in order to have some chances to reach satisfying conclusions.

It is now a pretty long time since Lévi-Strauss and Clastres have incidentally noticed that the most basic rule in so-called primitive societies was that women and men should have different activities. “A celibate [...] is only one half of a human being”, wrote Lévi-Strauss in 1956⁵; to which Clastres added in 1977 that “primitive society is... undivided. [...] Except between sexes, there is no division of work: [...] every man knows how to do all things that men should know to do, every woman knows how to perform all tasks that women have to perform”⁶. Clastres’ formula may look somewhat contradictory, but it is because the point he wanted to make was that in primitive societies, all individuals were equal. In fact, he was forced to acknowledge that this equality was confined within each sex, so to speak. Women and men made different things, and that is what made them necessary to each other, as observed Lévi-Strauss. If all individuals had been equal, that is, self-sufficient, there would have been no need for them to live in societies. So, the repartition of tasks between men and women may have been the first and foremost basic “rule” on which human societies were built.

I cannot pretend to treat this immense topic in a few pages. What I want to do is only to discuss it in a technological perspective. For so far as I know, the subject has been dealt with from every conceivable point of view, except technology. Which is something of a paradox, since to understand how tasks are distributed within a society, we must be able to tell with a minimum of precision what those tasks are. But the paradox is there, and one of its consequences is that most theories appear too incomplete or one-sided to be really convincing. If however we take seriously the technological perspective, it seems to me that we soon come by observations so basic or general as to be proposed as “principles”. The first principle I would like to discuss here is the following: *actions are not masculine or feminine as such; all things that can be done by human beings can be done by women as well as by men.*

And of this principle, war is a good example. Women are not usually considered to be able to be good warriors. But they were sometimes — in the African

⁵ After “La famille”, in R. Bellour & C. Clément, *Claude Lévi-Strauss...*, Paris, Gallimard, 1979, p. 106 (paper first published in H. L. Shapiro (ed.), *Man, Culture and Society*, New York, Oxford Univ. Press, 1956, pp. 261-285.

⁶ « Archéologie de la violence », *Libre*, 1977, 1, p. 156.

kingdom of Dahomey, for instance — and even if such occurrences are rare, they provide sufficient evidence that with adequate training, women can become as efficient fighters as men. The explanation, as previously, is probably to be sought in training. Training for war takes time, and in practically all societies, women are so useful for other purposes that using a part of their time to train them as warriors would be nonsense. The Dahomean exception seems linked to the development of the slave trade. Dahomey was one of the coastal kingdoms which prospered on this trade, and the determining factor seems to have been that girls were comparatively easy to capture, but not very valuable for sale on the Atlantic market. So, training them as warriors was an original but logical alternative, enabling the kings of Dahomey to increase the size of their armies, so as to get more slaves, etc. Of course, the system could work only insofar as Dahomey was alone to practise it, among neighbouring peoples who did not. But it worked, which proves that efficiency at war is more a matter of training than of sex.

But it does not mean that sex is irrelevant in the matter, because there are important differences in the training methods. Women warriors cannot be allowed to have sex, for instance, because it would make them dependent on other persons that the king or his delegates (who, in that case, have to be women or eunuchs). Whereas for men warriors, sex is a matter of course, so much so that armies were often followed by gangs of prostitutes with a quasi-official statute. This difference is essential, because it shows that if women can be trained as warriors, it is under the condition that they are trained differently, on their own, so to speak. Which leads us to our second principle: *men and women can perform the same activities, on the condition that they do not mix together.*

Now, the domain where this second principle applies most obviously is not war, but modern sport. From table-tennis to weight-lifting, the number of sportive disciplines is very high, but notwithstanding a few exceptions (half a dozen ones?) all disciplines are practised separately by men and by women. The main reason here is obvious: direct competition between men and women would be nonsense. But if competition is especially visible in sports, it is not restricted to them. Competition is present in all human activities, if only virtually, because doing something always implies a comparison with the way others do that same thing. Competition is a particular case of comparison, where the aim is typically to classify people on some scale of performance, whereas ordinary comparison rather result in norms. The point

that concerns us is that to be fair, or at least sensible, comparison and competition must involve either women or men, not both. Again, I am aware that there are some exceptions, but it is probable that these exceptions cannot do much else than confirming the rule. If women and men usually cannot perform together the same activities, it is because their respective norms or standards of action are necessarily different.

However, women and men very often work together, side by side. How is it possible? The answer comes from a third principle: *men and women can work together, on the condition that they perform different tasks*. And here, the example of harvesting techniques is especially clear. With techniques n° 2 to n° 7, only ears, cobs, panicles or grains are harvested, that is, small objects which can be put at once into a container (usually a basket), meaning that harvesting is one operation, after which the produce has only to be carried away. But with sickles, there comes into play another operation, because harvesting with sickles produces handfuls of stalks, and handfuls have to be gathered and bound into sheaves for being carried away. The same person can do both tasks, that is, cutting handfuls for a few minutes, then going back for gathering and binding the handfuls into sheaves. But the two tasks are often performed by different persons, or rather teams, one doing the cutting, the other doing the gathering and binding of sheaves. In that case, whenever men do the cutting, women do the gathering and binding, or conversely, but they do not mix. It is one of the best examples I know of men and women working together, but at different tasks.

In my opinion, these three “principles” are sufficient to account for a large majority of the real situations. Nevertheless, it is not to be denied that there are some situations where men and women make the same things together. It may be because they belong to the same family, as husband and wife or parents and children. But more generally, it is only possible if there is some convention allowing or prescribing them to do so. Such situations, I think, will be found more frequently in games or game-like activities than in work proper, although it is often difficult to trace a clear-cut limit between game and work. The best example I can think of does not involve work: it is the European salon dances of the 19th century, the most famous of which is the Vienna waltz, where women and men dance together, in couples, making the same movements on the same rhythm. In an ethnographic perspective, this kind of dance seems quite exceptional, the most general usage being that teams of men and of women dance separately, even if it is on the same ground. Now, it is obvious that the

classic European salon dances imply a strict code of civility, in which the role and behaviour of the participants are well defined. This will be our fourth and last “principle”: *for men and women to do the same things together, there must be a code specifying the conditions on which they are allowed to do so and the rules of behaviour they are expected to follow.*

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But if those principles are basic for understanding why there is a repartition of tasks between men and women, they are of little help if we want to understand why this repartition differs so widely between one society and another. As has been told before, sickle-harvesting was a women’s task in northern Europe and a men’s task in the south, and to my knowledge, there is at the moment no satisfying explanation why it should be so.

On the other hand, there are cases where the explanation is or looks obvious. The daily preparation of food, for instance, has long been an activity exclusively belonging to wives, the only exceptions being kings or other very rich or powerful personages, who could afford to have male cooks (e.g. Vatel at the court of Louis XIV). Since at least the beginning of the 19th century, commercial restaurants have had male cooks in increasing proportion, and with gastronomy becoming more and more fashionable, this trend has become overwhelming. In the 1950s, there were still some women among the top-ranking chefs of French cuisine; today, they seem to have practically disappeared. High cuisine has become an highly competitive business, where men have all but ousted women.

A similar process has occurred in bread-making. In rural Europe, making bread has been until the early 20th century a women’s job (it still is in some areas), whereas in the towns, the (commercial) bakers were men, and that since at least the Middle Ages. But in the case of bread, there is an additional factor. In some regions of northern Europe and of the Alps, where winters are long and hard, temperatures fall below zero for several months between, say, December and April, so that watermills cannot run, making it impossible to produce flour. A solution would be to make the necessary provisions of flour in advance, but flour does not always keep well in storage, so that in many cases, people go one step further and make their provision of

bread instead. This means that there is a period of a few days in autumn, before freezing sets in, when people have to knead and bake all the bread they will need during the four following months. In this case, bread is made by men. The additional factor is seasonality. Bread-making, like food preparation in general, belongs to women as long as the tasks involved recur daily or weekly and do not involve an especially large workforce. When the tasks are seasonal and require therefore a large workforce and a specific organization, they tend to be taken over by men.

The problem is of course that it may be difficult to draw the line between “daily” and “seasonal” tasks. But leaving this problem aside, the distinction can be very helpful as a step toward a better understanding of basic differences between civilizations. The two examples I am able to present now look as different as possible, they are the war of 1847 between the United States and Mexico, and the geographical distribution of beers and wines in the world.

The war of 1847 was won hands down by the Americans, and one of the reasons of their easy victory was a crucial difference in the organization in both armies⁷. The American army, like all the European armies of the time, had a special department called *commissariat* (in French *intendance*) which was in charge of preparing the food of soldiers, especially their bread. The members of this department were soldiers themselves — that is to say, men — and they were equipped with a specific materiel making it possible for a small number of them to nourish hundreds of their fellows. On the other side, Mexican soldiers, like most Mexican men, ate *tortillas*, and the process of tortilla-making is long and time-consuming. Maize grains have to be soaked for some time in hot water added with lime (*nixtamalization*), then ground into a paste by several successive grindings, and finally cooked on a hot plate, without any possibility of interruption because the intermediary products do not keep. From beginning to end, everything was done by hand — and by the hands of women, since in Mexico, the mere idea that men could have a part in it was absolutely unthinkable. Moreover, everything had to be done in due time, because tortillas should be eaten freshly-made. The consequences were that in the Mexican army of 1847, there was a large number of women (about one for every five to ten soldiers) in charge of making tortillas. These women, who had only a few donkeys to help them carrying their materiel and provisions, could not move quickly on long distances. So, either the

⁷ The following details are taken from Arnold J. Bauer, “Millers and Grinders, Technology and Household Economy in Meso-America”, *Agricultural History*, 1990, 64, 1.

army had to restrict its movements to remain in contact with them, or it had to leave them behind with little protection, making them an easy prey for the enemy. Clearly, each alternative was about as disastrous as the other.

The Mexican example is not alone of its kind. Herodotus reports that the Persian armies which invaded Greece in the 5th century B.C. were followed by crowds of women in charge of all the services required by the soldiers, including food and sex, making these armies slow to move and difficult to manage (not to mention the fact that those women had to be fed too, vastly increasing the volume of provisions needed). The spectacle of these immense but weak armies was plausibly what moved the Macedonians, some decades later, to replace women by a strictly limited number of male slaves in their armies, which enormously enhanced their mobility and efficiency. Alexander's campaigns in Asia were as easygoing as the war of the United States against Mexico in 1847. And the Macedonian organization was adopted and improved by the Romans, with results that have become an historical commonplace. I do not maintain that this factor was the only one accounting for the astonishing successes of the Roman armies. But when everything else has been considered — armament, tactics, etc. — it remains that armies have to be fed, and that the way their food supply is organized is relevant. Finally, note that the Macedonian example has something similar with the Dahomean one : for armies to be efficient, the other sex has to be kept at a distance.

My last example, dealing with beer and wine, seems at first glance to have nothing to do with the preceding one. Yet it is another case where the repartition of tasks between men and women may have had crucial consequences. So many studies have been published on alcoholic beverages since the classic books of Emerson (1908) and Maurizio (1933)⁸ that I do not think necessary to discuss here the different kinds of beers, wines, etc. Suffice it to say that “wines” are made with the juice of certain fruits of which the most common are grapes⁹, whereas “beers” are made with starchy produces, mainly cereals or tubers. The point is that beer-making is attested about everywhere in the world (except in rare areas where there are no cereals not tubers, or where it is prohibited by religion), whereas wine-making is confined to the

⁸ Edward R. Emerson, *Beverages past and present: An historical sketch...*, New York & London, G.P. Putnam's Sons, 1908 [repr. 2010]; Adam Maurizio, *Geschichte der gegorenen Getränke*, Berlin, Paul Parey, 1933 [repr. 1970].

⁹ I leave aside here the “wines” made of other fruits such as apples (cider) or of the sap of trees (palm-wine), etc.

Mediterranean countries and Europe. Why is it so? Vines do not grow everywhere, of course, but this cannot be a sufficient answer, because there are many places in Asia where vines can grow but wine was not made (things there are changing fast, by the way).

A possible explanation is storage. Today, beers as well as wines can be stored for months or years, but it was not always the case. Lager beers — beers of long-term conversation — are the only kinds of beer to be found on the market today, but they are of recent origin. In fact, the possibility to produce long-term keeping beers is the result of a number of innovations in the techniques of production (the selection of yeasts, for instance) and in the means of storage (casks, glass bottles, etc.). All this was a long and complex process, which in Europe began in the early Middle Ages but ended in the 19th century only. But if we go back to times or countries when this process had not taken place, we find that, (1) “beers” were always made for immediate consumption, they were not supposed to keep for more than a few hours, one or two days at most; and (2) they were made by women, like bread and other daily foods.

In fact, there was no need to conserve the final produce (beer) because what was kept in store was the raw material (grains or tubers), so that the beer could be made at will, only allowing for the time necessary to make it. But this is not the case with fruits like grapes. Ripe grapes cannot keep, except by drying (and I am not sure that dried grapes are a convenient material for making wine at will). Therefore, wine has to be made at once, the whole grape-harvest has to be processed at the same time. Which means that wine-making is a seasonal activity, requiring a large workforce, much larger than what is usual in the domestic domain. This has two important consequences, namely that (1) the produce (wine) must be susceptible to keep in storage for at least a few months, otherwise all the efforts spent to make it would be nonsense; and (2) wine-making is emphatically a men’s job and has probably been so since its beginning. Moreover, it is probable that from the beginning too, wine-making must have required more specialized equipments than beer-making, especially for pressing the crushed grapes and for storing large volumes of liquid; which is in concordance with what we have seen before.

With all that, have we found the answer to our question? To the first half of it, probably, for it is quite plausible that if beer-making was so universally practised, it is because it belonged to the domestic, feminine domain. But to the second half of the

question, that is, why wine-making did not develop to the East of the Caspian Sea¹⁰, a complete answer is still to come. The fact that wine-making was a seasonal work and a men's work goes some way toward explaining why it had a more restricted geographical distribution than beer-making, it does not tell us why this distribution excluded most of Asia. To go further, I think it will be necessary to look much more closely at the different processes responsible for the different distributions of tasks between men and women in the world.

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Our aim is not only a better understanding of the distribution of tasks between men and women, however. Our aim is a better understanding of the ways techniques – material culture – and social relationships shape each other. It is just that the distribution of tasks very probably comes first (*cf.* Lévi-Strauss & Clastres) and that it is accordingly a first step toward our more general aim.

The importance of details has often been stressed. In principle, everybody agrees. The problem is that many details are so ordinary, so commonplace, as to be all but invisible: the *jointée* and *érussage* are pretty good examples: they have not been really studied because nobody seems to have had precise reasons to do so. On the contrary, sowing and harvesting have obviously some importance, and if really precise description are not numerous, they exist and enable us to find the signification of at least some of the details. Which makes possible to understand, or at least to pose correctly problems such as the repartition of tasks. If such details as how to gather the stalks into handfuls for grasping before cutting are ignored, there is no chance whatever to arrive at any coherent result.

But if a full attention at details of practice is necessary, it is not sufficient. Many other factors are to be taken into consideration. I have mentioned some of them: competition, training, the greater or lesser specialization of skills and tools, and seasonality. There are certainly many others, among which I would like to cite the way innovations change the existing distribution of tasks within a given society. Let us suppose that a new task comes in. If it is assigned, say, to women, they will have

¹⁰ Recent archaeological finds suggest that wine-making was present in some areas of East Asia (e.g. Yunnan) in ancient times. Which poses another question: when and why has it since disappeared?

less available time for their former tasks, so that some of these former tasks will have to be either abandoned or transferred to men (and conversely).¹¹ Events like that do rarely happen in the presence of observers likely to record them. But they occur nevertheless, and they must be added to our catalogue of reasons why societies can look so similar and different at the same time.

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¹¹ To my knowledge, the only author to have made use of this process to account for the differences between similar societies (of South Australia and Tasmania) was Paul Descamps, "L'Atelier chez les sauvages", *Revue de l'Institut de Sociologie* (Université Libre de Bruxelles), nov. 1923, pp. 351-378.