

THE REVOLUTION OF THE AX

The word “revolution” has acquired, of recent years, a very broad meaning. It has been applied to any innovation entailing substantial economic and social change. For example, the term “neolithic revolution” is currently used to designate the transition from a hunting and gathering the fruits of the soil type of economy to the relatively sedentary life of the agriculturist. The acquisition of metal—copper, bronze, and, later, iron—also gave rise to all kinds of technical as well as social transformations. The patient researches of archeologists enable us to assess the impact of this “revolution of metal” which so profoundly altered the life of our ancestors. We have a general notion of the social changes that resulted from it, thanks to our knowledge of such things as the layout of villages or cities and the details of funeral accoutrements. Here again ethnology comes to the aid of archeology.

The chain reaction produced by the sudden appearance of metal in the society of the Stone Age can be studied, described, and evaluated in the midst of the twentieth century. Although the conditions under which the transition from one era to another is effectuated are not the

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same as those that prehistory allows us to glimpse, the attitude of our neolithic contemporaries could not have been essentially different from that of the men who cleared our forests. The fortunate or unfortunate effects resulting from the possession of some steel axes are a good illustration of the influence of technology upon the other aspects of a culture; far better than any vague demonstration, they prove the close ties which unite the elements that make up a culture.

One can get a precise idea of working conditions during the Stone Age by examining the isolated groups which even today, in South America, New Guinea, and Australia, employ a tool that corresponds to the neolith. In fact, most of the peoples who evidence such enthusiasm for iron tools live in tropical regions and practice an itinerant cultivation under the broiling sun. Contrary to popular belief, tropical regions are not generally propitious for agriculture, because their soil is notoriously poor. The chemical substances upon which their fertility depends are washed away by rains or destroyed by high temperatures or by insects. Only the soil wrested from forests, enriched by the accumulation of plant detritus, offers a layer of humus favorable for the growth of tubers and grain—the staple of the native diet. But, once this soil has been exposed to inclemency and to the sun, it rapidly loses its richness, and, after two or three years, new clearings have to be made. In the tropics, to live is to conquer the forest. The native is poorly equipped for this endless struggle because the stone ax, his main agricultural tool, is far from perfect. It hammers and hacks at fibers instead of splitting them. Moreover, the blade quickly becomes blunted or breaks, which is amply proved by the number of fragments amassed in ancient gardens. A vast area of the Amazon, of alluvial origin, is devoid of stone, and, in order to procure it, the Indians are obliged to organize veritable expeditions. The task of polishing the stone, while not as protracted as it was once thought to be, does, nevertheless, take several days. The ax has then to be firmly fitted to the handle. This requires skill, as well as the gathering of other needed materials, such as fibers, resin, and wax.

When the natives grapple with a giant forest tree, they simplify their task by burning the trunk with a slow fire. This enables them to cut the carbonized wood more easily. Moreover, the trees to be felled are selected in such a way that in falling they bring down other, less resistant ones. The underbrush is cleared out either by clubbing or by breaking shrubbery and lianas with the hands.

A simple steel ax accomplishes the same task with the greatest speed.

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The possessor of this marvelous tool is not only spared hard labor; he also has nothing to fear save the rains that may intervene before his work is done. The entire rhythm of agricultural work is thus transformed. The worker saves time and can, if he so chooses, increase the size of his gardens. More abundant harvests abolish the threat of famine, and infant mortality decreases. The group, having grown in numbers, will be feared by its neighbors, and its existence will be all the more assured. This chain of effects does not escape the attention of the Indian as he tries out his newly acquired steel ax against the trunk of a tree.

The fame of this "fabulous metal" spread rapidly throughout the forests and plains of tropical America long before white men penetrated them. Agents of the Protective Service for the Indians of Brazil, who, during the course of this century, pacified many tribes that had remained hostile, were amazed to find them in possession of axes and knives either obtained through barter with other tribes or seized as booty on raiding expeditions. Ever since the sixteenth century the acquisition of iron has been a factor in the warlike behavior of the Indians. A few years ago, during a trip to Santa Cruz de la Sierra, I gathered some information about the attacks perpetrated by the Yanaigua and the Tsirakua tribes against colonists established along the frontiers of their territories and wagon caravans traversing the southern province of Chiquitos. In each case cited to me, the Indians had secured not only cutting instruments but also pieces of iron, to the exclusion of other objects. They had even extracted nails from houses or vehicles they had seized. The Mojos Indians of eastern Bolivia, who had been peaceful agriculturalists, became slave-hunters for the Spanish in order to earn enough to buy axes and knives. A few tribes of the Chaco relinquished their liberty rather than do without tools. Occasionally, a tribe that possessed axes or knives was attacked by its less fortunate neighbors. The Conibos of the Ucayale threatened to rebel and to kill the local missionary if he continued to distribute tools, which they wanted to monopolize.

Iron created an invincible tyranny among those who discovered its uses. Once this metal became known, a return to the Stone Age was impossible. To a certain extent, the initial success of the Jesuit missionaries of the sixteenth and eighteenth centuries must be attributed to this fascination for the iron ax. When they launched their spiritual conquest of the forest Indians, the Indians had already had some contact with the white men or had at least heard about them. The missionaries

were not ignorant of the power and cruelty of this new tribe which suddenly appeared at their borders. The hatred and suspicion which Spanish or Portuguese adventurers had spread complicated their task. Nevertheless, a handful of priests without any military support were able to subdue peoples who, until then, had struggled against the encroaching white men and had refused to have any traffic with them. Rarely have historians pondered the reasons for this success, not having considered it a subject worthy of their attention. What indeed were the motives that led the Indians to adopt toward the Jesuits an attitude so different from the one they had displayed toward other white men? Why did they receive the Jesuits as friends and even accept their guardianship? The answer to these questions is not simple. The policy of the Jesuits triumphed for diverse reasons. However, after a careful perusal of the letters and reports which describe their first contacts with a "savage" tribe, one realizes the primordial role played by iron. The "black robes" were the bearers of this metal as well as the agents of the revolution to which it gave rise. They were probably welcomed with the same enthusiasm and the same avid curiosity that the merchants of the Bronze Age encountered when they arrived in the villages of neolithic Europe laden with their precious tools.

The Jesuits, who proceeded up a river of the Amazon basin in search of pagans to convert, did not start out on this adventure with empty hands. In the accounts of their travels they often mention the "small gifts that serve to bait the hook of faith." As Father Augustin Zapata said, in thanking his superior for sending him a package of wares: "May God reward Your Excellency for the weapons that You have sent us. They will enable us to win numerous nations over to God, for the natives are attracted by these gifts which insure their good will toward us. This makes it easy to achieve their Salvation as we mean to do." It is a simple matter to glean from the vast documentation left to us by the Jesuits those passages that serve to illustrate this policy of gifts which "pave the way toward God."

Aware of the power and prestige that their status as "masters of iron" conferred upon them, the priests established forges in their missions in order to attract Indians there and to detain them. One of the Jesuits writes: "The forges give us a good reputation, for they win over the savages whose life and subsistence depend upon these tools, to wit: the axes and knives with which they clear the forests in order to sow the plant they feed upon; the implements they use to build their huts, to

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fashion the hooks and points they fish with, and to make the other iron tools they dearly prize. They come from more than two hundred leagues around to forge or repair their tools." Every time they wanted to revolt, the fear of losing this advantage held them back. The same is true of other Indians who, during rebellions, spared only the blacksmiths and their forges. Thus the Piro Indians of the Ucayale killed Father Rickete only when they were certain they knew how to use the forge without his assistance. During that same period, another Jesuit, a neighbor of Father Rickete, having praised the iron that "enables us to make friends," advised his colleagues to be sparing of it lest the Indians should begin to believe that it could be harvested in the fields.

Although it was customary to attribute to Providence the zeal that certain peoples evidenced for Christianity, Father Chantre y Herrera, the historiographer of the Upper Amazon missions, had no hesitation in writing: "Only rarely does divine Reason—which the Indians scarcely understand—draw them into our mission. They settle there for very practical reasons. We can do nothing without the axes which we distribute."

Even today it is by means of axes, scissors, and liana-cutters, deposited along paths frequented by hostile groups, that the agents of the Protective Service for the Indians of Brazil attempt to establish contact with the Indians and to break their resistance. This is the same currency that the ethnographer employs to buy his right to remain with a tribe and to cull information from it. Dr. Darcy Ribeiro, in a study on the assimilation of Brazilian Indians which he prepared for UNESCO, transports us to a dramatic moment in the history of humanity: the end of the Stone Age. The Chokleng Indians of southern Brazil gave the agent of the Serviço an account of their first meeting with white men and of their discovery of iron. The following is a condensed version of it.

Some Chokleng Indians who had gone hunting in the forest were startled to discover a path that was different from their own. They were extremely astonished at the way the shrubbery obstructing the path had been eliminated: it had not been twisted or bent but *cut*. The Indians examined the underbrush and, after various surmises, decided to search for the mysterious beings who had cut trees in such a strange way. In following the path, they made an even more surprising discovery: a tree of great size had been felled. Stupefied, they formed a ring around the trunk to examine its plane surface. Some distance away was

another cause for concern: imprints in the sand which they could not attribute to any known animal. They followed these cautiously until they reached an opening where they saw beings of human form, but different from any with which they were familiar, standing around a white cabin. They decided to attack them at dawn, but instead they succumbed to impatience. Before sunrise all the white men were dead. Then the Indians tried to find the tools that could work such wonders. They picked up axes and sabers which they tested forthwith. The next day they observed that their victims were hairy, strangely pigmented men whose feet were inclosed in bags. In order to inspect the bodies, they undressed them and stood them up against poles. Everything they found in the camp was also subjected to a minute examination. Failing to understand the purpose of the pots, they broke them. After cracking the crania of the corpses to keep them from resuscitating, they left, taking with them only the iron utensils.

On the way back they tried out the axes and the knives. They attributed supernatural powers to these tools which enabled them to cut trees and shrubbery with the greatest of ease and with no ensuing fatigue. As soon as they were home, they announced the news and proceeded to demonstrate the efficacy of the instruments before the assembled members of the tribe. All those who had remained in the village instead of going hunting now went to the scene of the attack in order to verify the story they had been told. However, the owners of the axes and the knives did not enjoy their use for long. They were wounded or killed by jealous fellow tribesmen. Groups of Indians began to comb the region where the hairy men had been in the hope of encountering others from whom precious tools might be snatched. Sometimes these searches were crowned with success. Other white men were massacred and their camps pillaged, but many Indians fell victim to "portable thunder." The war against the white men was accompanied by other equally cruel wars against tribes which, having learned that the Choklengs possessed axes, attacked them in order to steal from them.

Iron, which had to be conquered or protected with weapons in hand, soon became a symbol of victory and courage. Some Indians prized iron objects the more because they had procured them after heavy battle. When, after they had been pacified, they received axes and knives as gifts, the Indians simulated conquest of them by a warlike charge. Today the iron objects which they possess in large quantities are

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coveted merely as symbols of wealth. The Chikrin Indians, as a consequence of their demand for scissors, are so well provided with them that they doubtless have more than any other group.

The conquest of iron enhanced the warlike spirit of the Choklengs; but, weakened by their dissensions, they finally had to submit to the white men and accept a protection that became slavery. We do not know to what extent other aspects of their culture were altered by this technological revolution or the changes that were contributed to our social order. But, thanks to the American ethnographer Allen Holmberg, we do know the unpredictable effects which the adoption of an object as simple as a steel ax can have upon a human group. The observations that Holmberg was able to make among the Siriono Indians of eastern Bolivia are comparable in nature to those of a scientist in a laboratory. He distributed hatchets to the Siriono, whose peripatetic and miserable life he shared in order to record their psychological reactions and the changes that would ensue in their mode of existence. His study was a controlled experiment. The Siriono are among the most primitive tribes of South America. Deriving their food supply mainly from hunting and fishing and a very rudimentary agriculture, their tools were of the crudest: a stick to search with, arrows and a bow too long to be easily manipulated. They had no stone utensils and therefore had been able to cultivate only tiny areas. The search for food dominated their actions and thoughts in an obsessive way. The cultural change that Holmberg expected began a few moments after they received their first axes. These Indians are very fond of palm cabbages, but with their wooden hunting poles they could only extricate one a day—hardly enough to satisfy one person. The ax enabled them to procure a good half-dozen during the same length of time. That very evening abundance and joy reigned in the camp. From then on the gathering of palm cabbages ceased to absorb their energies and monopolize their attention. The same was true of wild honey, to which the Siriono are passionately addicted. Formerly, with their wooden hunting poles, they were able to extract but a small quantity from the hollows of trees where the bees build their honeycombs; now the ax enabled them to get all they wanted. However, the abundance of honey proved deleterious to the cohesiveness of the group. The Siriono were accustomed to making an alcoholic drink with honey as the base. Preparing great quantities of mead, they now multiplied the occasions for drinking. Excited by the amount of alcohol they consumed, they gave free vent to their secret rancors, and the unequal dis-

tribution of axes had engendered deep-seated jealousy. Those who had not received any took advantage of the festivities to insult and even to beat the more favored individuals. Families ended up by being on bad terms, and the unity of the horde was broken.

From the very first year the Siriono, supplied with axes, acquired plantations and were almost overwhelmed by the harvest that fell to them. At first they wanted to devour everything, to the point of becoming ill; then, contrary to their wont, they agreed to barter the surplus of their products for game brought in from the hunt by less fortunate families. Here one witnessed the birth of trade among individuals who had known nothing of it. The possessors of axes, now well fed, no longer felt the same need to roam the forest and became transformed into an almost sedentary people. Their entire technology therefore changed. Houses, weapons, and tools were fashioned rapidly, and every one could enjoy a leisure never before experienced. As they became sedentary, the Siriono grew interested in animal-breeding and joyfully accepted any chickens that were offered them.

Although the ax has helped to produce social disorganization, it may also be a source of harmony. The Tupari Indians of the Mato Grosso assure ethnographer F. Caspar that relationships within the tribe have greatly improved since they obtained axes. Everyone, they claim, is able to feed his family and himself without too great an effort. "There is no longer any famine or jealousy caused by lack of food. All the men, whether or not they are good hunters, fill their stomachs equally well. Only the inept are more vegetarian than the others." But the rhythm of life has changed. Festivities that used to take place only on rare occasions are far more frequent today. To tell the truth, the Tuparis paid heavily for their advantages. In order to obtain their axes, they hired themselves out as rubber prospectors and contracted diseases which they transmitted to their villages, bringing destruction to a large percentage of the population. Despite their fear of catching the grippe or some other pulmonary infection, they nonetheless did not hesitate to expose themselves in the simple hope of procuring the precious tools.

It is quite curious to note the rapidity with which a group that has bartered stone for iron forgets how to use the old techniques. The acquisition of steel axes is attributed to a civilizing hero. Many Indians even deny that it is possible to cut down a tree with a stone implement. They refuse to regard the tools of their ancestors as having had any practical utility, referring to them as "thunder stones."

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Up to this point all our examples have been taken from the South American continent and specifically from tribes whose social organization was relatively simple. Far more profound has been the effect on the social and religious life of highly integrated and intricately structured groups. It is difficult to imagine a more complete revolution than that which the advent of the iron ax precipitated among the Yir Yoront of Cape York in Australia. An American sociologist, Lauriston Sharp, has presented it in the form of a sociological problem addressed to the sagacity of his readers: in view of the place held by the stone ax within the economic, social, religious, and moral structure of the Yir Yoront, what consequences have ensued in these various areas as a result of its replacement by the iron ax? Almost all the activities of the Yir Yoront, he says, who are divided into small nomadic groups over a vast territory, are directed toward hunting and harvesting. The ax is the most important part of their rudimentary equipment. They find it indispensable in procuring food, building their meager shelters, and obtaining warmth—in short, it is the foundation of their entire technology. It constitutes not only a tool par excellence but also a factor of social cohesiveness whose role, had not the stone ax disappeared, would have escaped the attention of ethnographers.

The Yir Yoront did not find in their own region the stones they needed to fashion their axes. They obtained them from another region in exchange for spears. The production of these weapons, whose tips consisted of ray fishtails instead of pointed blades, was the monopoly of a coastal tribe. Contact had been established between the regions that produced these different materials, and the Yir Yoront were extremely active participants. Like the making of the axes, these transactions were a masculine monopoly. They determined a network of relationships both commercial and political in which each group played a specific role. During the important initiation festivities the “sellers” and “buyers” met and took time from the religious ceremonies to exchange stone axes for spears, not the least of the attractions being the advantages that everyone derived from such transactions.

The men owned the axes, but the women were the principal users of these tools, borrowing them from their husbands, fathers, or uncles in accordance with very specific regulations. In keeping with this arrangement, the young people, who took no part in the commercial transactions, had to ask their elders whenever they needed an ax. Actually, the ax had become the symbol of virility, of masculine predominance, and

of the respectability assigned to age. The function discharged by the ax went beyond the social framework and extended even to the religious and mythical domains. For one of the clans of the Yir Yoront—it was called “Iguana-cloud-lit-by-the-sun”—the totem was precisely the stone ax. Although the ancestors of this group were believed to have discovered the stone ax, its members did not monopolize the making of it. However, during religious festivities they did have the privilege of symbolizing its employment. This detail is not without importance. In fact, according to the conception of the world entertained by these people, every action must reproduce the deeds and events that typified the kind of life led by the ancestors from the very beginning of time, the present being but a repetition of the mythical period that preceded it. This, therefore, was the significance of the stone ax before iron replaced it.

Recently the missionaries have distributed a great many iron axes among the Yir Yoront, either as recompense for work performed in their missions or merely as gifts, with an eye to currying favor. In either case, the missionaries hoped they would effect a rapid improvement in the living conditions of the population. Groups that were far from the European establishments did not have to wait long to receive, in their turn, the axes acquired in barter transactions. This resulted in the speedy disappearance of the stone ax. However, despite all estimates to the contrary, the iron ax failed to contribute to the material or moral progress of the Yir Yoront. The latter, it is true, derived advantages from the change. Once their toil was made easier, they came to have a leisure which hitherto had been denied them. But they did not employ it to enrich their cultural patrimony. Rather, they used it to sleep—“an art in which they excelled.”

Had this been the sole consequence, the situation would not have been too bad. Unfortunately, there were more serious ones, and they shook to its very foundations the social structure of the Yir Yoront. First of all, the system of barter which united the various groups became totally disorganized; ties of friendship and association between the hordes no longer served any purpose, and property ceased to move from the coast into the interior and vice versa; tribes and clans alike lost their independence and became tributary to the missionaries. The latter distributed goods according to principles that seemed strange and incomprehensible to the natives. Women and adolescents became the owners of axes and enjoyed the same rights as the adult males, including prop-

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erty rights, which until now had been an exclusively masculine prerogative. The old people, in particular, were adversely affected by this technical revolution; their dignity and age placed them at a disadvantage vis-à-vis the youth, who praised the services rendered by the missionaries and hastened to their missions whenever axes were being distributed. The old people, formerly so highly respected, became tributary to the women and the young folks, thus forfeiting both prestige and authority. For the first time the word "ax" was used with a feminine possessive—which also constituted a minor linguistic revolution. The initiation festivities had less sparkle because those who had formerly come to them to buy stones were no longer attracted by the necessity or the hope of making a good transaction. The entire system of ethical values was adversely affected by this situation. Ties of dependence were broken, and relationships between classes were altered. Among all members of the tribe there was a decline of feeling for moral values. Respect for property rights was weakened, and as a consequence thefts and other misdemeanors increased. Formerly, the mythology of the Yir Yoront had had an answer for everything: whenever a change occurred in their culture, they had added it to the body of legends in such a way as to integrate the innovation into their traditional system. However, such readaptation became impossible after the advent of the iron ax. To be sure, an attempt was made to attribute the iron ax to a clan whose totem consisted of white phantoms (associated with white men), but the clan which called itself "Iguana-cloud-lit-by-the-sun" claimed this privilege on the ground that the ax was one of their totems.

Today the Yir Yoront tribe is declining. Because of its inability to adapt itself to so many innovations, its totemic system has fallen into a state of decadence, and its disorganized social and religious order has further degenerated. The steel ax alone did not cause the demoralization of the tribe but it has been an important factor and, in some ways, the symbol of the entire process.

The three examples presented here are, in many respects, special cases because the adoption of the ax was unaccompanied by any other contacts. Generally speaking, when different civilizations stand face to face, what they borrow from each other is not confined to one technique alone. For this reason it is not easy to differentiate between beneficial results and those that are less positive. The consequences of the substitution of iron for stone seemed to us all the more deserving of attention because in all the cases chosen but one cultural element had been in-

volved. The presence of this element within the core of a primitive society constituted, of and by itself, a revolutionary ferment. One could cite other cultural acquisitions which, like the iron ax, exerted a decisive influence upon the destiny of a people. For example, the horse, which, in many regions of America, preceded the Europeans, had likewise helped to produce economic, social, and even moral transformations. The Mbaya Indians of the Gran Chaco were once hunters and semi-nomadic scavengers like their close relatives, the Tobas and the Pilagas of modern Argentina. They became masterful horsemen during the seventeenth century, engaged in plunder, and, in a few years, carved for themselves an actual empire. The victories of the Mbaya won them numerous captives whom they reduced to a servile people. Within the space of one or two generations, they created in the heart of South America a semifeudal society that curiously resembled the *Herrenvölker* of Asia and of Africa. Nothing remained of the democratic customs practiced by the nomadic horde. The families of the conquerors constituted an aristocratic caste whose arrogance and insolence must have astonished the Spaniards.

Cultural change has become one of the principal fields of interest in the social sciences. Reacting against the somewhat oversimplified conception of the nineteenth century, which attributed to civilization intrinsic virtues acknowledged by all, ethnographers have emphasized the resistance that many "primitive" or barbaric cultures offer to the introduction of innovations. By stressing the conservatism of the primitives, they ended up by creating another myth: the myth of their inertia. Actually, the so-called primitives are just as interested in new ideas and techniques as we are. The immobility of the primitive world is an illusion. Of course, the rhythm of change may be slow, but under certain circumstances, such as the ones we have examined here, it can also be extraordinarily rapid. Any culture, no matter how rudimentary it may be, centers its interest upon a determined, and unusually limited, number of activities. Consequently, it will always be ready to welcome innovations that fit into its own chosen domains. We have seen that this is true as regards the ax. Because this tool played a primordial role in agriculture, upon which the tribe's subsistence depends, and because the natives recognized the superiority of iron over stone, they had not the slightest hesitation in adopting it. The changes we have examined represent the natural consequence of stressing tendencies that already existed within the culture. Refusal of an alien technique always corresponds to

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an absence of motive or to the impossibility of integrating it into a system of values. How many objects collected as curiosities in the beginning are discarded as soon as one realizes that they do not satisfy any taste, any traditional aspiration! Resistance to change is caused either by ignorance, or by resentment against coercion, or by the belief that the security of the group is threatened.

There is a lesson to be derived from the history of the ax: that of the close cohesiveness of all the elements which, united by subtle and often imperceptible ties, constitute the culture of a society. However, one must not conclude from the cases I have cited that the totality of a culture is affected by a change in detail. When the culture is complex, certain domains subsist only indirectly or in such a way as to allay the repercussions of revolutions that occur within a different framework.

These small neolithic societies which have paid so dearly for the privilege of possessing iron offer us the very image of social disorganization—that pathology of human groups which scholars have found so difficult to define. The situation we have examined here is paradoxical. The anomaly resulting from the acquisition of the ax stemmed not from an event that clashed with the profound tendencies of the group but from the improved output of an already familiar technique. Chokleng, Siriono, and Yir Yoront were all, in a way, victims of the superfluity of a boon. It is for this reason that their destiny is exemplary.