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**THE EFFECT OF ENVIRONMENT ON HUMAN
PERFORMANCE: A MINORITY VIEW**

PICTURE TO YOURSELF a girl-child of eight or ten—naked, filthy, her hair a great matted ball hanging down, half hiding her face. She goes on all fours, and the only sound she utters is an eerie, wolf-like howl. She likes raw meat and will seize a live chicken, tear it apart, and eat it on the spot, entrails and all. She sleeps very little. She likes to prowls by night; and in the daytime she sits or crouches in a corner for hours—awake, but doing nothing, looking at nothing, just vegetating. An imbecile? Not at all. Although she does not in the least resemble the fictional examples of children raised by animal mothers, such as Tarzan of the Apes, she is a real-life “feral child”—Kamala, presumably born perfectly normal but raised by a wolf foster-mother instead of by human beings.

In spite of the scepticism with which accounts of children such as Kamala are sometimes received, it is really not surprising that animal mothers sometimes adopt human babies; in fact, it would be more surprising if they did not. The maternal instinct in a mature, female mammal is often very strong, and widely diffusive in its selection of an object. I have watched a motherly old cat recognize a visiting toddler as a baby-creature on sight, behaving in an unmistakably maternal and protective fashion, and finally stretching herself hospitably out upon the floor beside the child—who was five times her size—with tiny teats lazily and comfortably half-proffered, as if to say “Go right ahead, child, if you’re hungry!” Imagine, then, how things would go if the cat were of a suitable size to act as parent and protector; and if the child were alone out in the wilderness, crying with hunger, the mother-mammal grieving for lost cubs or kittens, her teats uncomfortably full. Is not adoption the almost inevitable result of such a situation? Such things do not happen often today in Western countries, where children are seldom abandoned or left unguarded in or near the wilderness, and where a lost child is immediately the object

of a thorough, large-scale search. But they must often have happened in past centuries, and they must happen even today in remote jungle villages and semi-wild territories—as seems, indeed, to be the case. From past centuries come stories of Lithuanian bear-boys, a cattle-boy, an Irish sheep-boy, several wolf-boys and girls, and some wild children found alone, with no indication as to what kind of animals, if any, had been their protectors. Most modern instances are from such countries as India, as was that of Kamala and the younger child found with her. The authenticity of some of the accounts, particularly the older ones, is perhaps open to question; but some of the recent ones, such as that of Kamala, are probably quite accurate.

For nine years the Reverend J. A. L. Singh and his wife lavished on Kamala the most patient care and teaching, in a never-despairing attempt to raise her up to the human norm. At the end of this time Kamala had lost most of her wolfish ways and was “a sweet and obedient child.” She could stand upright and could walk with difficulty, but could never run except on all fours. She was about seventeen years old when she died, yet she had a vocabulary of only fifty words, and mentally she was about three and a half.

If Kamala were the only case of this kind recorded, we might suppose that by a strange coincidence she happened to be a born mental defective. But this is a thing that has happened over and over again through the years—the wild child found, bestial, clawing and biting and scratching, running on all fours; the minister or teacher or doctor, determined to bring the creature back to his human heritage, working patiently day after day, week after week, year after year. And the story, with very few exceptions, always ends in the same tragic way. These children cannot be taught; there is nothing much there to teach. According to Robert M. Zingg, “Among animal-reared children there is but one case of recovery of human speech beyond the degree of Kamala.”

Some of the children were presumably not sponsored by animals, but managed to shift for themselves. These usually walked upright instead of on all fours, and some of them when found were still wearing the tattered shreds of old garments. Such children must of course have been past the period of infancy when they became lost or abandoned in the woods, since a very young baby could not possibly survive without a nurse. Zingg notes that such children usually recovered a much larger percentage of their human faculties than did the animal-reared children.

Often cited together with the cases of the feral children is that of Kaspar Hauser, who came out into the world of the early nineteenth century at the age of seventeen. Although he had spent much of his life isolated in a dungeon, could walk only a few steps, and was described as having about the mentality of a three-year-old child,

it is nevertheless certain that Kaspar Hauser had not developed completely without benefit of all human contact. For he could speak a few words and could write his name. One would judge that Kaspar Hauser fully recovered his normal human faculties, since he later obtained employment as a legal clerk, and also wrote interesting accounts of his emotions at coming out into the world after a lifetime of isolation. Yet according to Zingg a post-mortem examination showed that Kaspar Hauser's brain "was undersized, with an under-development of the cerebrum and the convolutions approaching . . . atrophy." This autopsy was performed more than a hundred years ago. I know of no post-mortem material on any of the feral children, recent or otherwise. But if Kaspar Hauser's brain really was abnormally small or atrophied, we must certainly wonder what deficiencies would have been revealed by post-mortem examination of the brains of the true feral children, who seem to have suffered so much more severe a stunting and dwarfing of their mental capacity than did Kaspar Hauser.

Do these feral children, perhaps, furnish us with the true answer to the always fascinating question, "What would a human being be like who had developed without benefit of other human beings?" Several decades ago the author of *Tarzan of the Apes* entertained the world with a much more pleasing and plausible-sounding answer to that question. The original Tarzan, by virtue of his superior inborn mental capacity (he was, if I remember rightly, the son of an English lord), easily dominated all the jungle around him, towering head and shoulders above even the native black men in intellect and force of character. But Edgar Rice Burroughs was drawing from his imagination alone when he created Tarzan. It would seem, judging by the feral children, that we owe each other much more than we have realized, and that the Tarzan story was strictly a phony. Without the moulding power of the human social environment (shared by us all down to the lowest Stone Age savage), apparently the individual cannot even begin to attain humanity, or to attain anything much above the mental level of the beasts.

This throws "environment" into bold and dramatic relief, makes its importance as a determining factor in human intelligence obvious to everyone.

It is often said that if two individuals or two groups could share a *completely* identical environment from infancy to adulthood, a comparison of their adult performance levels would necessarily give a true and fair picture of their relative "native capacities". This, however, is not true. In the environment of the wolf den, wolf child and human child were about equal, yet obviously their native capacities were anything but equal. For the wolf cubs, their environment was probably about the best and most stimulating to which they could respond, calling forth their

top rate of progress and mental growth. For the human child, the same environment was a crushingly low mental ceiling above her head, which warped and stunted the growth of her intellect beyond all possibility of repair.

A Leonardo da Vinci, raised by wolves, would presumably arrive at a mental maturity little above that of the wolves. If he had lived in the Old Stone Age he might have painted the most beautiful cave picture of all; he might have discovered a better method of chipping stone axes or have dreamed up such a device as the boomerang or the bola. And because he lived in the rich, intellectually stimulating culture of fifteenth-century Italy he was able to experiment with forerunners of the modern camera, submarine, steam engine, and airplane; he could be physicist, mathematician, astronomer, anatomist, botanist, zoologist, and engineer, as well as musician, poet, painter, and sculptor. *But what would a Leonardo da Vinci be if he were raised in a society of his intellectual peers—or superiors?* We cannot even imagine.

This whole problem of the effect of environment upon performance level has, it seems to me, been vastly over-simplified in the orthodox modern views on the question. It is absurd to pretend that a Leonardo and a dullard are being equally well served if they share an identical or closely similar environment all their lives. The same environment which will call forth the very best that is in the dullard, which will stimulate him to achieve all that he is capable of achieving, will be to a Leonardo a frustrating, stunting mental prison. And the environment which a Leonardo requires in order to fulfil even a small part of his vast potentialities will be incomprehensible and useless to the dullard.

It is only if two individuals or two groups are identical in native capacity to begin with that an identical environment will necessarily give both an equally good chance to develop their potentialities to the fullest. Otherwise, evidently the environment has to be *high enough to call forth the top rate of progress of the mentally HIGHER of the two*. If it is not, an identical or closely similar environment will tend to *hide or minimize* differences which actually exist.

Here, for example, are two boys, John and Edward, who both live in the same literate, modern society. Everyone says that John has had a better chance than Edward. He has had a much more stimulating environment all his life; he has been surrounded by more intelligent people and has been given a better education. He also scores much higher than Edward on any sort of mental test. But can we be sure that he has in fact had a better chance; can we safely assume that the "IQ" difference between them is in whole or in part a result of the environmental difference, so that there actually is less difference in the native abilities of the two boys than there is in their test performance level? No, we cannot. It *may* be the other

way around. Everything depends on how great was the original difference in native capacity in the first place. Since they were born into the same literate society, they share a somewhat similar environment. Both probably were educated in the public schools for the first few years at least; both have had access to the same libraries, radio and television programs, and movies. It may well be that this somewhat similar environment has served to overcome or conceal part of their difference in potential; it may be that there is even greater difference in their native abilities than there is in their performance levels. In any one individual case such as this there is no way of determining whether environment has exaggerated or minimized their original difference in potential, for there is no way of measuring native capacity as apart from the measurable ability which environment and heredity have together conspired to produce.

An astonishing number of students of the subject today seem to be under the rather odd impression that since in any one specific case we cannot prove that environment has *not* exaggerated these differences, we have therefore demonstrated that it always *does* exaggerate them. In taking it for granted that the effect of environment is invariably to magnify performance-level differences between individuals and between groups—whether grouped as to race, sex, national origin, or geographical section—such persons are making an assumption which does more credit to their decent, chivalrous instincts and to their dislike of the master-race psychology than it does to their capacity for objective thinking.

It is quite clear that there are three ceilings or roofs over the head of the developing individual. The first is his innate capacity—no one, obviously, can rise above that. The second is his social environment—the stimulation he receives from family, friends, and acquaintances. In a pre-literate culture that too is probably a limit; in a pre-literate culture it is doubtful if even individuals with the most brilliant potentialities can rise much above the mental level of their immediate social group. But in the literate cultures, especially those in which there is universal and compulsory education, the picture is much brighter. Here on the printed page children are introduced to the greatest minds that the human race has ever produced; and those who crave and can make use of such stimulation may grope their way out from under the social environment ceiling, climbing on up towards this new higher ceiling—the culture ceiling.

It follows that any pre-literate society will be at a great disadvantage as compared with a literate society. It is fairly obvious that any comparison of the average mental performance level of a group of savages from the jungle with that of a group of civilized persons who have been taught to read and write and figure will be an

extremely unfair one. But that, it seems to me, is just about the only instance where we may feel reasonably confident that the effect of environment has been to bring about a difference in performance level between two groups which is greater than their original difference in potential.

On the other hand, when we consider only groups which enjoy the benefit of universal, compulsory education, it is, I think, possible to show that heredity stands in a dynamic relationship to environment and thus is in the long run the active, controlling force, rather than the other way around.

We postulate within a literate society a sub-group of persons which is unchanging in intelligence, each generation being neither more nor less capable than the last. It is unchanging because the inherited mental potential of its members remains the same from generation to generation, as does its environment, or at least such elements of the environment as influence mental development; and because these two factors—inherited potential and environmental stimulus—are in equilibrium, are in a stable and static relationship with each other. We now postulate another sub-group within the same large literate society—more or less separate from the first because of race, geography, or some other barrier—with a lower average potential, a lower actual performance level, and an environment which is on the average considerably less stimulating. Hereditary potential and social environment are in equilibrium for this group, too, and hence its performance level is unchanging as the generations go by.

Now suppose that we perform a drastic experiment; suppose that we interchange a whole generation of babies from the first group with the babies of the underprivileged group, at birth. We now have a situation where heredity and environment are mis-mated—the higher environment is associated with the lower heredity, and the lower environment with the higher heredity. Which, then, will in the long run prove more powerful or more effective, heredity or environment?

Of one thing we can be virtually certain: in the first generation the gap between the average performance of the two groups will be narrowed. For the lower environment will certainly form a barrier to the intellectual development of some of the babies from the higher-ranking group; and the more stimulating environment enjoyed by the babies of the underprivileged group will, equally certainly, enable a larger or smaller proportion of those at the top of the distribution range of potential abilities to reach higher mental levels than they could have done otherwise. We do not know to what extent the gap will be narrowed; we cannot, I think, be sure that it will not be eliminated altogether—or even reversed, with the higher-ranking group babies, in the unstimulating environment, growing up to be less capable

than the babies of the underprivileged group in the more stimulating environment. In this latter event, it would certainly appear as though environment had "won", as though it had proved to be the more important factor. But let us not forget that so far we have considered the first generation only.

We can be fairly sure also of another fact: when they are grown, the babies of the group which has a slightly higher average potential will average higher in performance level than the babies of the originally underprivileged group *would have done in the same environment*—and thus higher also than the underprivileged-group adults who were their teachers and guides. With any individual child we cannot be sure of what will happen, but with the whole large group it is fairly certain that if we hold the environment constant and raise the average mental potential (as we have done for the unstimulating environment by placing in it the babies of the first group) the performance level will go up, just as it will if we hold the potential ability constant and raise the environmental stimulus factor (as we have done for the babies of the underprivileged group by placing them in the more stimulating environment).

It will soon be obvious that we have now a situation which is not static but dynamic—we have lost our equilibrium. When the children of the first group are grown, being more intelligent and more capable on the average than the preceding, underprivileged-group generation which brought them up, they will affect favorably the environment itself. *Their* children will be brought up by, surrounded by, and taught by a generation which is slightly more intelligent than the one which reared them. The environment, then, of this next generation is a little better, the potential ability the same—so that obviously its adult performance level will be a little better still. And so it will go, with each generation a little better off than the preceding one, until equilibrium is re-established at *exactly the same level as before*, with the environment no more and no less stimulating than it was for the first group before the interchange of infants.

The same thing is true in reverse, of course, for the babies of the once-underprivileged group, placed at birth in the more stimulating environment. They will be on the average more intelligent when they are grown than they would have been in the underprivileged-type environment, but less intelligent than the other group of babies would have become in the same favourable environment. Therefore the second generation of the once underprivileged-group children will encounter an environment which is anywhere from infinitesimally and substantially less stimulating than the one by which the first generation benefited—and so it will go in each generation until equilibrium is re-established at exactly the same level as before.

with this group which has a slightly lower potential now again showing a slightly lower average performance level, and again suffering under the handicap of a less stimulating environment than the higher group.

In our two mis-mated groups heredity, rather than environment, has won a total victory in the long run.

Since acquired characteristics cannot be inherited, environment normally does not affect the germ plasm of the race, except through evolutionary natural selection or the action of radiation or other disturbing factors in bringing about genetic mutation. Therefore environment affects performance only temporarily—no matter how stimulating or unstimulating the environment, each new generation starts afresh with just the same mental potential as ever; whereas the effect on the environment of the hereditary group potential is a continuing and cumulative one down through the generations.

The orthodox view today seems to be that there are no innate ability differences between human groups; that all groups, even those which may differ widely in *realized* ability levels, are identical in *potential* ability—identical as regards the mean, the range, and the distribution frequencies of all levels within that range. Yet there is really no evidence to show that this is true, nor even any very good reason why it *should* be true. The frequency distributions of genes determining physical size and shape, colouring, blood type, and inherited physical defects, peculiarities and excellences of all kinds, are known to vary widely from group to group. Therefore it would surely be surprising if the genes which act upon the nervous system were unlike all others in this respect.

If the potential abilities of two groups differ, their equilibrium points will also differ. If, on the other hand, the potential abilities of two sub-groups within a single literate society are the same, their respective equilibrium points will also be the same; and in this case it is mathematically certain that the gap between them will narrow with each generation that passes; the only question is, how fast?

When a minority group with a potential which is as high as or higher than that of other groups in the same society starts out with a marked environmental handicap, it will, because of the dynamic pressures toward equilibrium which will come into play, begin immediately to eliminate that handicap. That this process of the approach toward equilibrium is often extremely rapid is suggested by the history of certain racial groups which have migrated to new lands where there is good opportunity for advancement, such as the West Coast of the United States or the islands of the Pacific. Such groups, even though most of their members may have entered the area as illiterate indentured labourers of the least-skilled and lowest-paid sort,

totally unfamiliar with the language and customs of the land to which they have migrated, have nevertheless apparently needed only a generation or two to become groups characterized by an extremely high level of scholarship in the schools and colleges, by an exceptionally low incidence of crime, poverty, and dependence, and by leadership in business and the professions.

Perhaps we shall make faster progress towards understanding the world we live in and the forces in operation within it, once we have faced up to the possibility that all human groups are *not* exactly equal and exactly alike.

A MEDITATION UPON CHARITY

(After Webster)

Richard J. Schoeck

My soul, as I was walking down the street —
 Driven somehow like a ship in black storms
 Mind has known, driven by enormous hurt
 And shouting lost in some hell-hunted harm —
 Until some time came home at last the ship
 (And from the sea the sailor home on shore:
 So I, not drunk, unsteady have my lapse
 And down the street my consciousness explore).

Driven, I say, my soul my ship I know
 Not whither nor from whence the winds were blown,
 When suddenly in city dark a light
 Is friendly and a stranger asks my woe:
 I cannot tell the storm where I was gone
 But only the terror when was only night.