Chapter 9
Social Learning and Autism

1. Social Learning and Other Sources of Cognition

Social learning is one of several sources of cognition. The others fall into the three broad categories of *innate ability, experience* and *reasoning*. Among the most fundamental questions in cognitive science is the relative roles of these four sources. Beyond the question of how much is innate and how much acquired, which we have already begun to consider and shall continue to discuss in later chapters, is that of the relationship between what an individual discovers by himself and what he learns from others.

1.1 The Indispensable Role of Social Learning in Human Development

There are two areas in which social learning is indispensable. The most obvious is use of artefacts, especially those, such as language and social conventions, which are not concrete physical objects. In creating artefacts, human beings, though limited by certain natural constraints, nonetheless enjoy a large degree of freedom. An individual could not possibly be born with innate knowledge of them, nor could he derive it from reasoning and physical experience, other than experience of the artefact itself. He could not innately know that a tree is called “tree” and neither climbing, cutting or contemplating trees would give him the answer. This is something that must be learnt in one way or another from other human beings.

The second area is that of things like recognition of danger, that must be learnt socially because other ways, though theoretically possible, would not be practical. *Experience* of close escape would not be sufficient to preserve a species unless that species produced a very large number of offspring, since for every individual that survived there would be many more that were not as lucky. Even learning vicariously by observing the experience of a conspecific would be costly for the species. *Innate* fear is sufficient only for species that live in restricted environments in which potential dangers are limited. It also tends to have the disadvantage of interfering with behaviour unnecessarily by producing false alarms. Deer run at the slightest sound or movement. *Reasoning* is valuable, since by reasoning it is possible to infer which situations are likely to be dangerous without actually experiencing them, but it is not always fast enough to warn an individual in time to save him. For a species to be able to survive in a wide variety of environments, it needs a source that is quick and effective, yet flexible. Only social learning can provide that. If a population is able to teach its young what to fear, the experience of a few becomes sufficient to protect the rest. Such social learning of danger is found not only in man but in other primates and in certain other species as well.

1.2 Multiple Sources of Cognition

Many areas of cognition are derived from more than one of these sources. Some species innately know which plants can be eaten and which not. Other species learn by the experience of tasting something and finding it unpleasant, and others, such as humans, learn it socially. Even within a single species, some cognitions may be derived from multiple sources. Many things a child learns in school he has already begun to discover by himself. Formal instruction and individual discovery thereafter go hand in hand. Far from being inefficient, this redundancy can be very beneficial, especially in vital areas such as fear of danger, because existence of multiple sources is a greater guarantee that the cognition will be acquired. The benefits of the extra mechanisms are well worth the burden.

Such confluence of independent parallel mechanisms is not restricted to cognition, but characteristic of all biological needs. Any need with which an organism is faced will tend to be addressed by whatever means it has at its disposal. The more imperative the need, the more likely that it will be addressed by more than one mechanism. The need to protect the body from infection is performed by the various mechanisms that comprise the immune system. In the human species, the need for nourishment is addressed by a variety of behavioural and cognitive mechanisms. The infant has an innate sucking reflex. After a while it learns that the taste of food is pleasant and that ingesting relieves the pain of hunger. As an adult he also learns that he must eat to keep himself healthy even when he does not feel hungry. Finally, culture addresses the problem by developing such institutions as regular meals. Thus the need for nourishment is addressed by innate reflex, by learning, by reasoning, and by culture.

1.3 Individual Differences

The relative importance of the various sources is not the same for all individuals. In particular, in the large overlap between reasoning and social learning, some derive more from one, some from the other. The greater one's ability to reason and discover things for himself, the less will be his need to learn them from others. Conversely, the greater his ability to learn from others, the less his need to reason. Both are essential for all human beings, because there are some areas that are served by one and not the other, but their relative importance in areas served by both varies.

Society adjusts the demands it makes on its members to the level that the majority are able to attain. Food is not sold in packages that are too heavy for most people to carry and stairs are not made too high for them to climb comfortably. So too, cognitive demands are commensurate with normal social learning and reasoning abilities. Since the Social Learning System is ordinarily very strong, society makes heavy demands on it. The demands on reasoning are somewhat less because reasoning aptitudes vary widely. In areas served by both, such as acquisition of new modes of behaviour, the individual is expected to acquire the general knowledge and skills of his culture by social learning but is not expected to devise his own. Only in those areas in which social learning cannot substitute for reasoning, such as in the application of socially acquired skills, must each individual be able to reason for himself.

The structure of society is therefore such that as long as an individual has basic reasoning abilities, a healthy Social Learning System enables him to work, marry, raise a family and function in most ordinary life situations. If, however, his Social Learning System functions poorly, as it does in autism, society's demands may be hard to meet. To compensate, greater reasoning ability is necessary. The individual must be able not only to apply skills but also to create them. The significance of reasoning is therefore greater in autism. An autistic child whose reasoning aptitude is strong and who is curious and motivated to explore his surroundings eventually attains by reasoning most of the things he failed to learn socially. In spite of poor social learning, he achieves normal or superior intelligence. But one whose aptitude for reasoning is too weak to derive them himself is left without any available source. He fails to attain fundamental behavioural and cognitive abilities, so he never becomes able to function normally. Although his potential intelligence is within the normal range, functionally he remains mentally handicapped. Lack of social learning therefore magnifies deficits in mental aptitude. A child whose aptitude is above a certain critical level is able to learn and achieve normal intelligence even if he is severely autistic. One whose aptitude is below it ends up not only autistic but also mentally impaired.

For those whose aptitude for reasoning enables them to learn and develop, the severity of autistic traits tends to decrease over time. Cognition and behaviour that they attain through individual discovery help stimulate social learning. They realise, generally very early, that human beings are different from other things in their environment. They direct attention to them and sooner

of later learn to communicate and share knowledge with them. Social learning then becomes added to their other mechanisms of cognitive development and a Social Learning System gradually develops. Though it rarely becomes as strong as in normal children, there is nonetheless positive reinforcement. Every social skill they learn makes them a little less different from others, a little less separated, and a little better able to understand those around them. They are a little less alone, which is to say, a little less autistic.

2. Social Learning and the Foundations of Cognitive Development

If the Social Learning System is impaired, all areas of cognitive development are liable to be affected, since they are all normally derived in part from social learning. Those areas most dependent upon social learning, however, will suffer the most, especially the development of social interaction itself, while those addressed by a combination of other sources will be less affected. In some cases, the effects of impairment are compounded by feedback within the system as time goes on. Each early failure interferes with the normal development of the system, resulting in greater failure later on. In other cases, the system eventually compensates for early loss and rights itself.

2.1 Understanding the Behaviour of Others

The autistic infant's lack of attention to human beings and resultant failure to learn about their behaviour immediately becomes compounded and handicaps his further learning. For what the normal child learns about human beings during his first months are elements of human behaviour from which understanding of more complex behaviour is constructed. However crude those early structures are, they are the beginning of the cyclical process. The autistic child who has not yet learnt to understand basic human behaviour remains like an infant, for whom understanding of more complex behaviour is too baffling to even be attempted. His experience of it is neither wonder nor even confusion, but simply chaos. He no more expects to find meaning in it than we do in pebbles on the road or tea leaves in a cup. The learning process is thereafter doubly handicapped. While it continues to suffer from the primary deficit of lack of interest in human beings, it is also weaker due to lack of interest during earlier learning.

Among the most basic components of social interaction are recognition of voice, of facial expressions and of other simple body movements. If an infant does not learn the significance of smiles and frowns, for instance, he will not be able to recognise approval and disapproval when he gets older. The result is a very profound lack of communication. When parents scold or punish a child or when they praise him, they do not doubt that he understands them. They consider the meaning of these actions, unlike language, to be intuitively obvious and therefore universally understood. After all, are they not clear to all normal children? They do not realise that for many autistic children these supposedly natural expressions are more difficult to understand than words and sentences.

The normal child understands them easily not because they are intuitively obvious but because he has spent many years becoming familiar with human beings. For an autistic child, who has not developed in that way, they remain a foreign language. He understands neither his caregivers' requests nor their responses to his own behaviour. Parents and teachers consider the autistic child who fails to respond to discipline stubborn and wilful, but in many cases it is because he honestly does not understand. He knows, of course, that something bad is happening to him, but he does not understand it as a punishment. Indeed, he may not yet have grasped the basic concept of punishment and reward as responses to his own actions. Are there not many things that caregivers do to him that he finds unpleasant? Sometimes they make him eat his food, go to bed or put on his shoes. How is scolding, beating, or making him sit in a corner different? Normal children who have been paying

attention to human expressions and learning about them can tell the difference effortlessly, but he cannot.

Reward and punishment are also heavily dependent upon social context. Punishment for doing the wrong thing is only the culmination of a long process, of which warning, whether by intentional verbal communication or by unintentional indications of anger such as facial expressions and tone of voice, is a major component. The normal child recognises warning signs, and even if he does not know what in his behaviour is disapproved, when something bad happens afterwards he knows it is a punishment. He is also aware of the broader context. He knows what sort of things he is supposed to do and what he is not. Furthermore, the normal child has begun to develop some sense of pride and shame, to value social acceptance and suffer from rejection. These eventually become even stronger motivations than the physical pleasure of reward and the pain of punishment. Although his understanding of the situation is not like that of an adult, he is aware of certain relationships that exist between him and others and of certain mutual expectations.

Normal children are already functionally aware of certain social contexts before the end of their first year. Even without such concepts as minds and emotions, they know that what they do has something to do with the other person and what the other person does has something to do with them. It is within this context that their caregivers are able to train them and control their behaviour. Such training is ineffective for the autistic child for whom neither context, relationship nor even other beings exist yet, even functionally. He may repeat the same disapproved behaviour with neither awareness of disapproval nor expectation of punishment. He does not understand what he is supposed to do, so punishment is meaningless, and if he does not recognise the warning signs it comes as a complete surprise. He knows something bad has just happened to him but he doesn't know why and doesn't even suspect it has anything to do with what he just did.

The deficit is not in potential to be controlled or taught new behaviour, because autistic children who cannot be disciplined the way normal children are can nonetheless be trained by the kind of conditioning methods used in training animals. These do not depend upon the subject recognising the social context or having learnt the basics of social interaction. Reward and punishment are direct responses to their actions. They do not involve the intermediary of the will or desire of another human being, or even awareness of oneself or of one's own actions. They simply make certain behaviours pleasant and desirable by association with pleasant results that follow, and make others undesirable by association with unpleasant ones. Normal children too, can be trained this way, but such methods are rarely used because social training, when available, is easier. It is easier to communicate to a child what is expected of him than to engineer the circumstances so that he will discover it himself. The effectiveness of these methods with autistic children shows that the failure of normal methods is due to their specifically social aspect.

Even when an autistic child does respond to his teachers and caregivers, he doesn't always learn from them as well as a normal child does. The normal child is more in tune with his teachers' thoughts and goals, so even if he does not understand them completely, he has some idea of what he is supposed to learn. The autistic child, by contrast, may be oblivious to their intentions, so even when he succeeds in learning the immediate task, he misses the broader ones that are their real goal. This is especially detrimental for the acquisition of reasoning skills, which are rarely taught explicitly. Students are expected to develop them in the course of learning specific tasks. So when the autistic child succeeds in learning superficial rote skills but not underlying principles, it is not because he is unable to reason and make inferences, but because he did not understand the implicit direction that his teachers were giving him.

2.2 Interest and Motivation

Another way early failure of social learning becomes compounded is through failure to develop interest and motivation. The less a child learns socially, the less will be his interest and therefore his motivation for future social learning. For the normal child, the more he understands human beings, the more interesting they become for him, and the more of his attention he directs toward them in preference to the rest of his surroundings. This augments his innate interest in human features, further motivating his social learning. Not so a child who is specifically impaired in social learning. As he gains greater understanding of the physical world, the gap between that and his understanding of the world of humans widens. He finds inanimate objects more interesting, especially those that are regular and predictable, such as wheels that turn at a constant rate. He pays more attention to them so he learns more about them. Although humans too, as part of the physical world, are also better understood now, their behaviour, being more complex than that of inanimate objects, is still more confusing, so attention to humans is less attractive.

2.3 Positive Reinforcement of Autistic Patterns

As cognitive development progresses in the autistic child, the patterns established during the early period, in which human beings played a relatively small role, tend to reinforce themselves by shaping the child's approach to subsequent experience. These then promote the development of further non-social patterns of learning and thought. Where the normal child asks for help when he receives a new toy, the autistic child is more inclined to try to figure it out himself. Even in mild autism with normal intelligence, in which the child is aware of the existence of both options, inclination produces action which reinforces inclination, as well as promoting increased development of both cognition and skills. Every time he gets a new toy and figures it out himself, his tendency for independent problem-solving increases, as do the specific skills he gains. The patterns of asking for help and learning from others do not develop.

Initially, this autistic tendency itself is not a handicap for cognitive or even for social development. The first steps of social learning take place in the basic biological relationship of infant and caregiver. There, an autistic infant who is not otherwise mentally impaired is not at a disadvantage. If he fails to learn, it is neither because he is unable nor because the opportunity is lacking, but because, for want of internal motivation, he does not take advantage of those opportunities to actualise his potential. The failure of cognition to develop, however, immediately begins to become a handicap, and it becomes increasingly severe as development proceeds. More advanced steps, which would normally take place first in the context of interaction with other children, then with groups and then with adult society, require basic social skills. A child who has not acquired those skills cannot participate, firstly for lack of the skills themselves and secondly because others will not accept him.

Even a child who is only mildly autistic, who does learn socially during infancy but at a slower rate than normal children, suffers a serious handicap by the time he enters school. By then, other children have already gained extensive social skills and are interacting with each other in multiple complex ways. The autistic child may now be ready and perhaps even eager to interact with them, but only on the level of a two year old. If he is given that opportunity he will continue to develop, though still slowly. Under normal circumstances, however, that opportunity is no longer available, since other children of his age want a more advanced relationship. Nor is playing with younger children a satisfactory option, because his other cognitive skills are too far beyond theirs. Unless special provision is made, he will not have the opportunity to interact in ways appropriate for his level of social development, and will be excluded from avenues of future social learning. From then on, he will not achieve even the slow development of which he is capable. As the system of social interest and learning gains momentum in other children, he will fall further and further behind, and as the gap between them widens, he will become increasingly handicapped.

3. Social Learning and the Continual Development of the Personality

Social learning doesn't end with childhood. It is an ongoing process. The individual never becomes a totally independent being. Society is a system within which each member is a component as well as being a system himself, thus the individual is a subsystem. Both individual and group are dynamic, constantly changing, and constantly influencing one another. Each individual's current state at any moment is a product of both his own previous state and that of society. At the same time, the state of society is a product of its own previous state and those of all of its members.

As the individual continues learning socially throughout his life, his personality is being influenced and modified by society. At any moment, his thoughts and behaviour are directed not by internal forces alone, but also by the collective personality of the group. The changing interests of the child as he grows older are the result not only of growth and maturation, but also, perhaps even more so, of social expectations. Not only is he inclined to conform to the expectations of caregivers and peers, his own expectation of himself has been moulded by society. He has observed older children and learnt what they are like, and he expects to become like them. Such expectation is more powerful than desire. It is not an option. It is a certainty - it cannot fail.

To function within a group one must be part of it. One must adopt the feelings and attitudes it represents or at the least, be aware of them and take them into consideration. When an adult adopts a new style or political position, it is generally not because he has tired of the old one or has rejected it because he has seen its shortcomings, but because he is conforming to the group with which he identifies and whose values he has internalised.

Since the need to learn socially is never over, autism continues to be a handicap throughout life. Even if an intelligent autistic adult has managed, by reasoning, training, or other means, to acquire a normal range of social skills, he is never free of the need to continue learning socially to keep up with the current state of the group. He needs to be coordinated with the group itself, for otherwise he will proceed merrily along his own way and soon drift away from them again. For all he has learnt and developed, social learning remains an uphill struggle, because the deficit in autism lies in the Social Learning System itself.

Were autism caused by lack of a concept or an ability, such as Theory of Mind or Executive Functions, it might be overcome. Understanding the emotions of others and organising experience and action are all skills, and with appropriate training and practice they can be acquired. Though they come more easily to some than to others, in none are they innate. Just as no human being is born with an innate ability to read, write, or play a musical instrument, but with effort can acquire them, neither is he born with the abilities needed to relate to others, but these too he can learn. Even if he is autistic and it is more difficult for him than for most others, he can learn them. The reason he remains autistic even after specific skills and understanding have been attained is that the deficit in autism is in a process, and whenever that process is called upon, the autistic individual is again at a disadvantage.

4. Culture as a Regulator of Cognitive Development

The role of social learning in cognitive and behavioural development is not only as a *source* but also as a *regulator*, regulating both *scope* and *rate*.

4.1 Regulation of Scope

Society tells the child which things are important and should be learnt and which are unimportant and should be ignored. This is accomplished primarily by directing behaviour and secondarily by

instilling values. These then affect learning in multiple ways. Behaviour itself produces cognitive development, because those things that one practises he learns more about. By promoting certain modes of behaviour, society also makes clear which things are important and in which ways. Once an individual internalises those social values, he makes greater effort to learn the things he has come to consider important. He also remembers them more easily even without making any special effort. The mental structures involved in behaviours and cognitions that are endowed with importance are given higher priority for processing, so they become more strongly reinforced and assimilate new components more readily. The adoption of the values of one's culture is therefore an important part of the Social Learning System, facilitating acquisition of certain kinds of skills and knowledge by endowing them with deep interest so they attract attention and are learnt with little conscious effort. Adoption of socially prescribed values of importance and interest also makes learning itself easier. When a child learns the same things as other children he benefits from the assistance of peers and teachers. Society addresses the problems learners face and develops mechanisms to solve them. When he follows his own interests, no such social support is available. He must do it on his own.

In addition to their effect on social learning, social interaction and adoption of cultural values themselves comprise a positive feedback system. Interaction promotes internalisation of social values, and one who shares values with others has a broader basis for interaction. He is more interested in joining their activities and they are more inclined to accept him and include him.

By influencing which of the many possible directions an individual's cognitive development takes, social guidance keeps all members of the group close to one another. The direction imposed on a child's development by the social environment is much more restrictive than that imposed by physical circumstances. Indeed, relevant physical restrictions are few and are learnt early on. A child who closes drawers on his fingers because he has not paid attention to the positions of drawer and hand soon notices and learns to push the drawer from the outside. Society, by contrast, is constantly directing him, restricting him in new ways and relentlessly chiding him if he fails to comply.

4.2 Regulation of Rate

Since it is through activity that cognition develops, without activity there can be no cognitive development. Stimulating and encouraging activity is therefore another important function of social learning. By constantly introducing the child to new and varied activities, it guarantees that he moves on from one stage to the next. But when, as in autism, social learning is deficient, development may stagnate for want of sufficient motivation and many important aptitudes may never be realised. An autistic child who ignores the activities of others rather than being attracted to them as normal children are may not be motivated to try and to practise new things. Instead, he gets stuck on familiar activities that he enjoys and repeats them over and over again.

For those autistic children who are self-motivated by general curiosity and spontaneous interest in new things, lack of social motivation is less detrimental. They may keep up with and even excel their normal companions. When that curiosity is coupled with appropriate aptitude, interest is reinforced by success and a system propelled by positive feedback emerges. The exceptional achievements of autistic geniuses are generally due to this sort of cognitive development system. Even autistic geniuses whose overall intelligence is well above average, however, are often weak in certain areas because their development is not guided by social norms. No matter how self-motivated a child is, social learning still plays a valuable role in guiding development.

Those children who lack general curiosity but find specific areas interesting may attain considerable abilities in those areas while remaining behind in others. The extreme is the idiot-savant, who is mentally impaired in all but one area in which his ability is significantly above

average. More common but less striking are those who are less severely autistic and whose Social Learning Systems eventually function well enough to bring overall functioning into the normal range, but who excel in one area that they find personally interesting.

For those autistic children who have little or no self-motivation, however, continual artificial motivation is needed to maintain cognitive development and ensure the achievement of a normal range of cognitive abilities. Caregivers and teachers must not only be dedicated, but must also be skilful. They must know what kind of cognitive goals to set for the child at each stage of his development and must be sufficiently familiar with the child to know which methods of motivation will be effective for him.

4.3 Damping

There is, however, a negative side to social guidance, for while it motivates children to develop in areas valued by the culture, it directs them to ignore others. And while it urges them to achieve their potentials up to the norm, it discourages them from going farther. This damping effect is revealed by the superior achievements of the many bright autistic children who surpass their normal comrades in their areas of personal interest because they have not learnt what not to be interested in and when to limit their achievement. It is also evident from comparison of levels of achievement in different cultures. The physical and mental achievements that are considered ordinary and are expected of all normal members of one culture seem amazing to those of another. In some cultures children learn long passages by heart, and by adulthood have developed memories that in our culture would be considered phenomenal. But abilities such as reading fluently and solving algebraic problems, which are commonplace in our own culture, may seem super-human in others. Such achievements show, on the one hand, how great the potential of the normal human being actually is, and on the other, how powerful social influence is in both encouraging and limiting its achievement.

4.4 Common Sense

Failure of cognitive development to be guided in socially expected directions leads to *lack of common sense*. Lack of common sense is particularly conspicuous in autistic individuals of normal or superior intelligence, because it is so incongruous with the rest of their abilities.

Common sense is the body of knowledge that “everyone” knows and that is therefore considered obvious. The belief that common sense is obvious, however, is the same sort of naive mistake as believing that the words of one’s native language are inherently connected to their meanings. Like language, common sense is essentially culturally defined. Some of the things that are considered common sense may be trivial or useless, but have been invested with significance by culture. Some may not even be true at all. Unlike language, however, common sense is not entirely arbitrary. Most common sense involves universal fundamental world knowledge that every individual would eventually discover by himself were he not to learn it socially. And since it is derived from generations of experience in the physical world, most of it is at least approximately true. False beliefs are the minority.

Furthermore, much common sense is of vital practical importance. Aside from its value in getting along with other members of society, it is needed for functioning in the physical world. So even though lack of common sense in autism is often seen as benign and even humorous, it can be a serious handicap.

But even things that are true and important are not necessarily obvious. The speed and ease with which normal members of a culture acquire this knowledge and therefore its apparent obviousness is a result not of its truth but of its ubiquity in their social environment. Everyone

around them knows these things and expects them to be known, so they learn and believe them too. For common sense, like social values, is rarely taught explicitly. They are implicit in the behaviour of adults, and it is from observing and emulating that behaviour that the child gradually infers them. People are careful with coins, store them in secure places, and don't go throwing them around in the street. They don't just give them away to anyone who asks for them, especially not in large quantities. The normal child imitates these behaviours and comes to value money. That is, he comes to consider it something special and important. He doesn't need to be taught that later on.

4.5 Social Identity

The existence of a subcategory of acquired knowledge such as common sense, whose acquisition is socially prescribed as well as being socially mediated, is a necessary part of human cognitive development. One of the greatest assets of the human species is *flexibility*, the capacity to adapt to a wide range of conditions. Flexibility is achieved by each individual starting out with a minimum of innate cognition and behaviour and forming a cognitive "personality" during the period of childhood and adolescence. That cognitive personality must be tailored to the needs the individual will face in the environment within which he is to live. Within any environment there are various degrees of necessity. Certain knowledge and behaviour are absolutely essential, others are highly desirable, some are helpful and some are useless. The moulding of the individual cognitive personality cannot, however, be left to either individual experience or reasoning, because they alone are not sufficient to ensure that the correct priorities will be assigned, so social learning must step in.

The necessity of social learning in the development of appropriate attitudes and priorities is in part because reasoning and learning from the environment are not always fast enough to produce the essential cognitions and behaviours by the time they are needed, as has already discussed. But it is also because the needs of early childhood are not the same as those of later life, so even were a child able to rapidly construct a system of conduct and values appropriate for his current situation, he would need to periodically revise it, sometimes radically, as he moved on into adulthood. Social learning facilitates these transitions in two ways. The first is by laying the foundations of the adult mode already in childhood. The child begins to learn adult values before they are relevant for him and before he can individually appreciate them, so that later when he needs them they will already be in place. The second is by directing him to gradually change and modify his behaviour and values as he grows older, so that those that he actually practises are the ones that are appropriate for his age.

Under the guidance of social learning, an individual navigates through his continually changing status in society, beginning as a child who must respect and defer to older members, and eventually becoming a respected elder himself. Society teaches him how he should view himself. Indeed, it tells him what he is. He does not bear the burden of modifying his own identity and deciding what path it should follow. By identifying as a member of a certain age group, the transitions are done for him. He reflects the changing identities that society assigns him, and lives into them one by one.

His attitude toward his own knowledge undergoes a corresponding change. As a child, when there was something he did not know, he could confidently turn to parents and teachers for the answer. After a while, he finds that what he does not know, few others know either. The disconcerting loss of reliable sources of information is compensated by the realisation that his own opinion has itself become a reliable source, one that not only conforms to reality but that is trusted by others. It is from others who now discuss questions with him and turn to him for answers that he becomes convinced of his new competence.

Social identity, knowing who and what one is within society and how to behave accordingly, is therefore closely related to common sense, both in its social origin and in its function in guiding the individual in his interactions with others.

4.6 Good Judgement

Akin to *common sense* is *good judgement*. Here again, much of what is considered good judgement is neither absolute nor objective, but culturally defined. Criteria of good judgement vary from one culture to another, and among social groups within cultures. But although they are to a certain degree arbitrary, like common sense, most good judgement is, if not exactly valid, at least approximately so, because it too has been tested and proven over the many years of its development within the culture. In most healthy cultures both generally represent intrinsically true principles. Social learning gives the normal human being the advantage of drawing on the bank of knowledge of many individuals and many generations, giving him immediate access to skills and knowledge that might otherwise take him years to discover by himself.

Good judgement is much more subtle than common sense. It involves not only values and information, but also methods of thought and reasoning. Judgement means balancing pros and cons, both of which are correct but must be weighed against one another. Even with the help of social learning, these skills take many years to develop. It is a process that is never completed, because new and different situations continue to arise.

Since few people have consistently good judgement, poor judgement in autism is less obvious than lack of common sense. Most intelligent autistic adults attain the basic level of their culture, so although they may continue to make mistakes in unusual situations it is not considered strange because normal people make such mistakes too. Only when otherwise intelligent autistic adults make the sorts of mistakes that are never made by others does this abnormality become apparent. Like lack of common sense, this is puzzling if one does not recognise the role social learning normally plays in the development of good judgement, and how easy it is to make basic mistakes without it.

Judgement is especially important in human relations, because they are so complex and involve so many conflicting values and subtle differences. In situations that occur frequently, cultural norms relieve the individual of the need to make difficult decisions on his own. Even in unusual situations, they provide foundations and guidelines that make decisions easier. This cultural background is generally taken for granted, so it is rarely appreciated.

Cultural standards of judgement are particularly important in moral questions such as generosity and kindness. How much should one person sacrifice to help another? How much should he be willing to risk? An intelligent autistic person who has failed to learn cultural standards appears at times uncaring, selfish or thoughtless, and at others foolishly over-kind and naive. Objectively, however, his odd behaviour is sometimes no less rational than the norm.

4.7 Fear of Danger

In light of the earlier discussion of origins of sense of danger, it is not surprising that autistic children often fail to fear certain genuine dangers while fearing other things that are perfectly harmless. In human beings the capacity to fear is innate, but what evokes it in an individual is learnt. The infant innately fears loud noises and similar sudden intense stimuli, but this has little to do with real danger. To learn what is really dangerous and what is not by personal experience would require many years. For the normal child, most basic recognition of danger is learnt socially. In unfamiliar situations, he looks to caregivers and peers for guidance. Even before he can

communicate verbally, he “checks” with his mother by looking into her eyes and reading her expression to tell whether the situation is safe.

Nonetheless, inappropriate fears are not unique to autism. Normal children, too, develop fears of harmless things, generally through unpleasant experiences associated with them. As time goes on, however, these dissipate. Later experiences in which the child can see that they are not really dangerous is only part of this process. More important is the behaviour of caregivers and peers, who show no fear of them. It is this latter source of correction that the autistic child lacks. Since he fails to learn socially, he persists in his mistakes until, if he is sufficiently intelligent and if he finds himself in enough corrective situations, experience and reasoning teach him otherwise. Sometimes, however, he is able to avoid the situations he fears, thereby denying himself this opportunity. When he does experience them, he may find it so traumatic that he fails to see how harmless they really are. Without social correction, therefore, some irrational fears persist indefinitely.

Persistent irrational private fears are not without counterpart in culture. The cultural evaluation of what is safe and what is dangerous can sometimes be in error too, leaving unfounded fears intact while genuine dangers go unrecognised. For centuries, very normal people drank contaminated water but would not walk under ladders. The irrational private fears of autistic children are no stranger than superstitions and other irrational communal fears that persist even though experience does not substantiate them. The difference is that they are not shared by others, and that is what makes them seem so strange.

5. Sensation

Among the traits of autism described earlier, there are some that are neither cognitive nor emotional, but involve, rather, lower-level neurological factors. Most fall into the category of *sensory abnormalities,* including both *hypersensitivity* and *hyposensitivity*. These can involve any of the senses. Hypersensitivity and hyposensitivity often coexist, a single individual being overly sensitive to certain things while barely noticing others. Hypersensitivity often involves discomfort, but not always. Superior ability to discriminate between pitches or colours, or to hear faint sounds such as the hum of a television in a distant room, are also kinds of hypersensitivity. Hyposensitivity is most noticeable in global tolerance of pain and less so in tolerance of specific sensations or when the threshold is only slightly above normal.

Some children who are hypersensitive find stimuli only mildly annoying while others find them intolerable. Some refuse to wear specific materials, others are bothered by any kind of clothing because anything that touches or restricts their bodies is uncomfortable for them. Odours of perfumes or household cleansers, the hum of florescent lights, the texture of foods, are all potential sources of discomfort. When discomfort is mild and the irritant is only occasionally encountered it may simply be an inconvenience, but if it is severe and difficult to avoid, it can interfere with daily life.

Hypersensitivity is especially problematic in young children who cannot explain what is bothering them. Without any apparent reason they refuse to wear certain clothing or to go to certain places. If caregivers try to force them, they scream and fight. When that happens, all too often adults see it simply as stubbornness and misbehaviour. They don’t realise that what for them seems innocuous is being experiencing by the child as painful. Those children who become able to communicate as they get older are sometimes able to tell others what is bothering them, but sometimes they cannot identify it themselves. Often, they don’t express it because they don’t realise that others are not experiencing it the same way they are. They make the same kind of erroneous assumption as their caregivers do, but in the opposite way. Each assumes the other has the same sensory experience as he does, so there is no need to tell them.

These phenomena have been a challenge for most of the earlier aetiological theories, especially those that attribute autism to innate deficits in higher cognitive areas such as Theory of Mind or Executive Functions. Even for those that attribute autism to low-level processing of sensory information, as did the early neurological theories, sensory abnormalities are problematic. They cannot be the unique cause of autism, because none are present in all cases and there are many cases of autism that do not involve any sensory abnormalities at all. Furthermore, sensory abnormalities are not unique to autism. The same abnormalities appear in some who are not autistic, so autism cannot be a necessary outcome. No satisfactory explanation has yet been offered.

5.1 The Social Moulding of Sensation

To see how these phenomena may be explained by deficits in social learning, we must again re-examine normal development and question some of our assumptions about it, in particular, the assumption that individual sensory differences are innate. At first this assumption seems reasonable. Since sensory mechanisms are not accessible to conscious inspection, it seems that they are lower neurological phenomena, meaning that they provide input to higher cognitive processes but do not receive input from them. Cross-cultural studies and studies of the course of cognitive development, however, prove otherwise.

Even before the infant learns to speak, his caregivers have begun to influence how he experiences sensations. They smile and say “Yummy!” when he eats the food they give him and frown and say “Yuk!” when he eats grass and earth. When he falls and bruises himself they are upset and comfort him, but when he cries because his clothing irritates his skin or his shoes squeeze his feet, they ignore him and scold him if he persists.

For the normal child, for whom social interaction is a large and central part of life, these behaviours of caregivers and, by implication, the values they represent, are part of the experience of sensation. Long before he can consciously reason that if Mummy says it hurts then it must really hurt, he has begun to experience things the way his caregivers present them to him. In situations in which his discomfort is ignored, though at first he may fuss and protest, he ultimately succumbs to social demands. Soon he becomes accustomed to the discomfort, and after a while he doesn’t even notice it any more. Scratchy flannel trousers are a small part of his world compared to the pleasurable experience of interacting with Mummy, and having conceded the fight to get them off, he is soon distracted and forgets them.

But the world of the autistic child is very different. His awareness of the social situation is much less than that of the normal child, so the uncomfortable trousers are a much larger portion of his experience. If he is forced to comply, the sensation that was initially experienced as unpleasant becomes only more so, and the social experience, far from being rewarding, becomes stressful.

Acquiescing to the demands of others makes heavy demands on a child’s social interaction system, and in the autistic child that system may simply not be up to it. He has less comprehension of caregivers’ requests than does the normal child and less interest in pleasing them. Even though for the normal child as well, caregivers’ demands seem arbitrary and may be distasteful, past experience of acquiescence has generally been rewarded, so he is inclined to give in now too. For the autistic child, past experience has not always been positive. When he did give in, what happened next was not necessarily pleasant. Other children might have enjoyed it, but he did not. The normal child’s experience of coercion is different too, because it is in the context of an underlying desire to please. For the autistic child it is just force.

For the normal child, accepting social demands of tolerance of discomfort is one part of the process by which sensitivity itself is moulded. By living with uncomfortable sensations he gradually becomes accustomed to them until he no longer experiences them as uncomfortable at all. He happily gets dressed and puts on his shoes in the morning. The sensation of the leather squeezing

his feet is no longer an unpleasant one. This process continues into adulthood, when, by becoming a member of society, he comes to experience sensation as others do. By identifying with society and accepting its values, he comes to enjoy those things that they consider pleasurable and to suffer from those that they consider painful.

This social moulding of sensory experience is evident in the cultural differences in experience of pain. It is well known that cultures differ in their readiness to express pain. Mediterranean cultures tend to express pain more freely than Northern European and American cultures, where ability to tolerate pain is considered a virtue and expression of pain a sign of weakness. But the difference goes beyond outward expression. Not only the expression of pain but the experience itself is modified by culture. Food that is considered tasty in one culture is considered intolerably spicy or sour in another. The temperatures at which drinks and food are taken vary similarly. The scalding hot drinks that are enjoyed in one country burn the tongue in another. This is not just a matter of public display, for these extremes are not only tolerated but enjoyed. There are even cultures whose members subject themselves to being cut and burnt without any sign of pain. Sensitivity can also vary from one occupation to another. Those who are regularly exposed to intense heat or cold become accustomed to them and no longer find them disturbing. On the other hand, some, such as musicians and craftsmen, develop acute sensitivity, and notice fine differences that most people cannot detect.

The range of sensitivity found in autism is similar to that found among cultures. Though an autistic child who is unusually tolerant of extreme temperatures or acutely sensitive to certain sounds or scents seems strange to us, there exist other cultures in which comparable sensitivity is the norm. It is only within our own cultural context that the autistic child's sensitivity is abnormal. The existence of such norms in other cultures proves that they are within the natural capacity of most human beings. That an autistic child develops them indicates not that he is innately abnormal, but that he has failed to develop in the way of his own culture.

Both cultural and autistic variations reveal the plasticity of the complex process that lies between the physiological phenomena of stimulation of the nerve endings and the evaluation of the neural message. Which stimuli are attended to and which are ignored, which are experienced as pleasant and which as painful, which are differentiated from one another and which are not, are all subject to modification by development. This is one aspect of the general flexibility of the human nervous system. The benefit of such flexibility is that through it each individual becomes fine-tuned to the specific needs he is likely to face in the environment in which he will live. However, it also results in a range of variation within the human species that does not necessarily serve any particular purpose.

Social learning is one of the main factors that guides that development, especially with respect to those sensations that are neither innately pleasurable nor painful. It is culture that endows them with positive or negative values. Under the influence of his culture, the sensory experience of the normal child becomes standardised. It becomes similar to that of others in his social group. This contributes to his ability to function in both the physical and social environments. He is better able to understand and to share the experiences of others, because they are similar to his own. He therefore participates more in activities with them, and as they share common experiences, his feelings are further moulded and become even more similar to theirs. Within this system there are reciprocal relationship between sensation and higher cognitive processes, between awareness and reasoning, and various other components. Once the nervous system has become sensitive to a particular sensation, that sensation is available to become part of new behavioural and cognitive structures. After they have developed, they in turn affect sensation, causing it to be noticed even more. Positive feedback thus propels the system to develop in this direction.

Since the autistic child is less influenced by social learning, his sensory processing tends to develop idiosyncratically. Innate inclinations and accidents of experience play a much greater role

for him than they do for a normal child. Abnormal sensory processing then feeds back into other areas of development. Instead of sharing and understanding the experience of others, he becomes increasingly estranged from them. How severe his divergence from the norm will be and which direction it will take depends upon many factors, among them attitude of caregivers and peers. If they adjust to him and help him interact and share experiences with them, his sensory processing may gradually come closer to the norm. Especially for those children whose intelligence is normal and who, from adolescence on, want to become more like others, normalisation of sensory processing becomes part of the general normalisation of social interaction.

5.2 Innate and Developmental Factors in Development of Sensation

It would be a mistake, though, to conclude that the innate sensory disposition of all infants is similar and that sensory differences are entirely products of external influence during the course of development. On the contrary, there is vast innate variation among all infants, normal as well as autistic, and it is the standardising effect of social development that normally suppresses and minimises variation. It would also be incorrect to conclude that the autistic child, free from social influence, remains close to his innate nature. In autistic as in normal children, the raw inherited sensory constitution, whatever it may be, is radically modified in the course of development. The difference is that in autistic development accidental and other non-social factors play a greater role in that modification, so it is not consistently in the direction of standardisation.

6. Cognitive Experience

An individual's experience of the world consists not only of sensation, but also of cognitive interpretation by which sensations are given meaning. Part of this is conscious, but part is like sensation itself in that, even though it is cognitive, it is performed without conscious attention. The influence of development on cognitive interpretation is even more profound than on sensation itself. An individual's actual experience is therefore a product of the *external world* that is the source of stimuli, his own innate *biological nature*, and various factors that have been shaped during the course of *development*.

6.1 Significance

One aspect of cognitive experience is *significance*. A red light means stop, a green light means go. A sweet smell means something good to eat. Even recognition of physical objects, for instance, that the form of an animal body indicates a living being, is a cognitive process that goes far beyond sensation. Without cognition there are no objects - only colours, forms, sounds and odours. Significance is a product of development. For the neonate no sensations have significance, but by adulthood most do. Whether the origin of that significance is a physical property like the form of a poisonous snake, or a cultural convention like the colour of a traffic signal, the individual's recognition of it is a cognitive process. These processes are products of gradual development, in which social learning normally plays a central role.

6.2 Context

After significance, the most important of the cognitive aspects of experience is *context.* Most human experience takes place within multiple overlapping contexts. There are the broad contexts of the world in which one lives and the narrow contexts of where he is standing at the moment and what he is doing. Sensations have very different meanings in different contexts. Getting a black-eye by

being punched by a bully is very different from getting one in a fight with your friend or by being hit by a football. The physical sensation associated with many emotions is just general excitement. In one context it is experienced as fear, in another as elation. It is the context that defines it, altering the significance so radically that it ranges from extremes of positive to negative.

Like significance, context is a subjective evaluation, not an objective reality. Standing at the edge of a swimming pool, one child is eager to jump in, another is terrified even though he knows the water is too shallow to drown in. Physical reality is only part of what a human being perceives to be the context of his experience. How he perceives the situation, how he evaluates it and what it means to him, are all partially subjective, and are all products of his cognitive development.

For the normal individual, cultural thinking has a strong influence on both significance and context. A girl who grows up in a culture in which curly hair is considered beautiful is proud of her curls, but if she grows up in one in which straight hair is preferred she hates them. School is a very different context for a child whose family values education than for one who has been taught to see it as a burden. Even when there is no exact socially learnt model, socially derived foundations underlie evaluation.

Some contexts are standard cultural ones. For a student in school, his basic identity as a student and his specific position as a member of a class are rich cultural stereotypes which tell him many things about what he is and how he is to behave. They define priorities. He must obey the teacher, but not at the expense of displeasing his friends. For a motorist, context tells whether or not he must obey a posted sign and what the consequences will be if he does not. In one place all signs must be obeyed strictly, in another there may be considerable leeway. It may be acceptable to drive a little above the speed limit, but not to go through a red light.

6.3 Identity

Another part of experience is who and what the individual himself, the subject of the experience, is. The infant has no awareness of his own existence. The concept of self that he eventual attains evolves gradually, beginning with the division between what he later will see as his own body and the rest of the world. Reasoning, physical experience and social learning all contribute to the formation of these concepts. The first steps are physical. There are sensations that he experiences when he bites his hands or his feet that are absent when he bites his toys or his spoon. He also finds that there are certain things whose motion he can control and others that he cannot. He does not need social learning to discover that there is a difference between his own limbs and other objects. Nor does he need social learning to discover that there are other bodies that are similar to the one for which he has sensations and over which he has control, but which he cannot control and for which he does not experience sensations. There are hands, large and small, that look like the ones that he can move and that cause him sensations, but that he can neither control nor feel. Even without social learning he can therefore derive some concept of the similarity between himself and those around him.

But there is much about what he is and his relationship to the world around him that can only be derived from social learning. And even of those things that he might be able to discover by himself, there is much that can be learnt more quickly and surely that way. The small child knows that biting his own finger hurts but biting his brother’s finger does not. He does not at first realise, however, that it hurts his brother. Social learning greatly hastens this insight. He knows that when he covers his eyes the world disappears, but he does not realise that it only disappears for him and not for others, and that covering the eyes of others, even though it has no consequence for him, makes the world disappear for them.

Identity as a human being, which has far-reaching implications for his attitude both toward himself and others, is derived much more rapidly from social learning than from direct experience

and reasoning. The games caregivers play with the infant and the way they speak to him are scaffolds that enable him to develop it long before he otherwise would have. By speaking about him the same way they speak about themselves and about other children, patterns of thinking are moulded through which they come to be seen as similar beings. Later, he learns to think of himself as a certain sort of person from whom certain behaviour is expected and who experiences situations certain ways. When he sees other children enjoying a game, he expects to enjoy it too. These expectations themselves then affect his actual experience. He finds that he does indeed enjoy it, although it may be for no reason other than the expectation itself.

6.4 Influence of the Current Social Environment

Social learning affects an individual both *immediately*, as his current experience is affected by the thoughts and feelings of those around him, and *cumulatively*, as it moulds his development. The feelings of others and their evaluation of the situation influence how he himself feels and how he evaluates it. To the extent that he is able to infer their interpretation from their behaviour, he is inclined to interpret it as they do. These two kinds of social influence, immediate and developmental, are essentially different. The former is similar to the way lower animals move with the flock and are guided by its collective behaviour. The latter is a kind of learning and mental development that has fewer counterparts in other species.

In humans, these two kinds of social learning are related reciprocally. The influence of others around him is one of the sources of social learning by which development is guided. At the same time, it is the cumulative effect of earlier development that makes current influence possible. For without an extensive basis of social development, the individual's experience of the situation would be so different from that of others around him that theirs would barely be comprehensible to him, and even if he could understand it, he would find it too foreign to be influenced by it.

In this way, the social foundation of the individual's interpretation of significance and context is constantly being revised. For the most part, earlier ones are reinforced, but when his own occasionally stray from those of the group or when the group attitude itself changes, they are corrected and realigned with cultural norms. For the normal individual, therefore, sharing a new experience with others increases his similarity and thereby his feeling of mutuality with them. So even though both group and individual experience are dynamic and slowly changing, they remain coordinated with one another.

6.5 Cognitive Experience in Autism

In autism, the cognitive aspect of experience is even less standardised than the sensory one, because it is derived to a greater extent from development. Together, they make the autistic child's experience very different from those of his companions. His concept of himself, the centre of experience, is different too. Identity as a member of a group is weak, and for many autistic children it is entirely lacking. Some have not even come to the realisation that they are beings similar to those around them. Since identity is one of the foundations of social learning, this contributes to the weakness of the Social Learning System and to the perpetuation of autism. Lack of common experience further estranges him from the others, so his own current experience is less influenced by theirs. His inclination to pay attention to them is further weakened, and he notices even less of their behaviour. Rather than being continually standardised, the autistic child's experience drifts even farther away. This is thus one of the important paths of positive feedback in both normal and autistic development, and therefore one of the sources of increasing divergence between the autistic and normal child.

7. Emotion

The next area in which deficits in social learning affect the course of development and cause abnormalities is *emotion*. Emotions are complex phenomena. Of the various components of emotion, the three most important are how the emotion is *experienced*, the *situations* that evoke it, and how it is *expressed*. Normally, all are moulded by social learning, and through social learning they are profoundly influenced by culture. Throughout life, the normal individual is continually imitating the emotional behaviour of others, thereby increasingly standardising his own feelings and emotional behaviour. By late childhood, the sort of idiosyncratic emotional behaviour that is often seen in small children has all but disappeared.

7.1 Expression

Of the three, the one in which social influence is most obvious is *expression*. Although there are certain universal biological emotion-behaviours such as smiling, frowning and other facial expressions for basic emotions, most expressions are cultural conventions. Even the biological ones are modified by culture. In some, the modification is minimal. Smiles and frowns are more or less the same in all cultures. In others, the difference can be pronounced. Laughter sounds very different in one culture than in another. Beyond these basic emotions, however, the more specific expressions, such as those of sympathy and contempt, are so heavily cultural that they may not be understood at all by members of other cultures.

The normal child learns to recognise and to produce the standard expressions of emotion of his own culture. As with other aspects of culture, he learns first from his caregivers and later from his peers and teachers. This acquisition of standard modes of expression begins very early. By the end of his first year, the infant has begun to supplement the small range of innate expressions and vocalisations. Instead of just crying and cooing, he begins to produce speech-like sounds which already have more specific meaning.

Expressions of emotions involve subtle inflections of voice and complex combinations of minute movements, especially of facial muscles. Both their recognition and production are difficult skills, and it is only by means of a long cyclical learning process that a human being becomes competent in cultural emotional behaviour. Normal children succeed in spite of the difficulty because they attend consistently to both the expressions of others and the emotion-evoking situations they are experiencing, thereby learning to recognise not only the expressions and situations themselves, but also the correlation between them.

The repertoire of culturally standard expressions they develop then has the secondary effect of moulding emotional experience in culturally standard ways. When he sees others responding to apparently similar situations by using different emotional expressions, the child is guided to look for differences between them, and when he finds them, to consider them significant. Otherwise, subtle differences might not have been noticed, or might have been ignored if they were. The child’s behaviour, and by implication his feelings, becomes a copy of that of his caregivers.

The degree to which an autistic child learns standard expressions of emotion varies with intelligence, severity of autism, and other factors. Those children who are so severely autistic that they do not speak, generally do not learn standard emotion expressions either. In mild autism and Asperger Syndrome, there is wide variation. Most develop some standard facial expressions, although many also retain some idiosyncratic ones. All understand basic emotion words and recognise basic emotions in others, but most still have difficulty distinguishing between emotions whose expressions are similar such as between anger and fear. Even with normal or superior intelligence, a child who does not pay attention to human beings and does not observe their behaviour carefully will not learn these fine distinctions. The cyclical corrective process by which

normal children gradually bring their emotion behaviour within the cultural standard functions poorly, so they remain at the crude early level both in understanding emotion words and in expression. Abnormal emotional development then impairs the rest of the Social Learning System. To the extent that the child fails to recognise culturally standard words, facial expressions, and tones of voice, he does not understand the situation as well as normal children do and cannot learn as much from it.

7.2 Situation

As we saw above in our discussion of sensation, culture contributes to how sensations are interpreted and evaluated, and therefore to which situations are experienced as painful and which as pleasurable. To the extent that happiness is the natural response to pleasure, sadness to pain, and fear to danger, modifying which situations are experienced as pleasurable and which as painful at either the sensory or cognitive level will in turn modify when a person feels happy and expresses happiness and when he feels and expresses sadness. Even natural expressions of emotion that are not generally modified by social learning are therefore indirectly modified by how a situation is experienced.

Beyond sensory factors are cognitive ones. The child who has grown up with a pet dog smiles when he sees a friendly dog coming, but the child who is unaccustomed to dogs cries, especially if he has been taught that dogs are dangerous. Since culture pervades cognition, it colours much of cognitive experience. In contemporary Western music, the major mode is identified with happiness and the minor mode with sadness. For a child raised in this culture, they come eventually to evoke these standard cultural feelings.

The autistic child who has not learnt to interpret experience in the standard way of his culture may therefore experience emotions that are very different from those of his comrades. If the significance of a situation is different for him, the emotions it evokes will be too. Situations that are pleasurable for normal children may be frightening for some who are autistic. Others that normal children find painful they may find pleasurable. An autistic child may see no significance in some of the situations that are meaningful for normal children and therefore have no emotional response to them at all, but attach intense private emotional significance to others, which therefore evoke strong feelings for him.

Here too there is positive feedback. Recognition of conventional modes of expression is one of the ways by which a person becomes aware of how others evaluate a situation, and therefore by which his own evaluation of it is moulded. By experiencing it this way himself he becomes a little more culturally standardised both in his evaluation of situations and in his emotional responses, and therefore better able to understand others and evaluate other situations. Others can also understand him and interact with him better, which increases his integration into society.

7.21 Death and Mourning

Death of a close friend or relative is one of the situations whose significance is profoundly moulded by culture. Not only mourning practices, but emotional response to death varies widely over different cultures and historical periods. Having failed to learn these, or having learnt them only imperfectly, even intelligent autistic children and adults do not always show the expected grief upon the death of a close relative. Some even state in a detached way that they do not have those feelings because they are autistic. Others are unaware that for most people these are spontaneous expressions of inner feelings, and think, instead, that they are rationally controlled behaviour.

Most observers find this shocking. Unaware of the role of social learning in emotion, they mistake this lack of cultural influence for profound innate abnormality. It is seen as lack of the

fundamental human feelings of care and attachment. But, while personal attachment does indeed tend to be weak in autism, it is not that but the absence of culturally standard behaviour that is being noticed and found shocking.

7.3 The Experience of Emotion

Culture modifies not only the situations that evoke emotions and the way they are expressed, but also they very way they are felt. Culture prescribes how long and how intensely an emotion is to be experienced. In some cultures one is encouraged to relish his joy, in some to submit to his sorrow. Others cultivate detachment, discouraging both stewing in anger and indulging in happiness. Some cultivate awareness of the causes or reasons for emotions, others do not. Whether one is introspective or simply accepts emotions as facts of life is partially a matter of personal bent and partially cultural. To the extent that an autistic child fails to learn the cultural way to experience his emotions as the normal child does, his emotional experience will tend to develop idiosyncratically.

7.31 Differentiation of Emotions

Emotions vary in complexity. There are simple ones like joy, sorrow and anger, and complex ones like surprise, disappointment and resentment. The simple ones are universal. They are found in all cultures, and appear very early in development. Some of the complex ones, such as surprise, are universal too. Most complex emotions, however, are formed in the course of development, generally under the guidance of culture.

One of the most important aspects of the process of emotional development is *differentiation*. From the infant's basic feelings of "pleasant" and "painful" develop the child's positive feelings of satisfaction and excitement, and negative ones of sorrow, anger and frustration. By the time he becomes an adult he has acquired a vast repertoire of specific emotions relating to different situations. This is similar to the differentiation of sensation of general pain to specific kinds of pain in different parts of the body. The small child cannot yet differentiate between the pain of burning a finger on the stove and that of squeezing it in the drawer. As he learns about his surroundings and about his own body, different sensations gain different meanings and become distinguished from one another. But whereas differentiation of sensation is limited by the physical nature of the nervous system, emotions are not subject to comparable limitation. There is no end to possible emotions and it is always possible to develop new ones.

Emotions, like understanding of the physical world, are derived from a combination of sources, some of which involve social learning and some of which do not. For the normal child, in emotional development as in understanding the physical world, the role of social learning is central, while for the autistic child independent discovery and development are more important. But developing emotions independently is much more difficult than learning about the world, so even intelligent autistic children tend to lag farther behind emotionally than cognitively. Except for those rare few who are unusually creative, autistic children lack the variety and richness of emotional experience of normal children. Though their potential to evolve a variety of specific feelings and emotions is not inferior, they cannot create, on their own, the many fine variations that others inherit from their culture.

For normal children, language plays an important role in the process of learning to differentiate emotions. By learning separate words for different emotions, the normal child is guided to see differences between them. For those autistic children who do not acquire language at the normal age, delayed language development has the secondary effect of delaying not only appreciation of the emotions of others but also development of their own. For the autistic child who has not learnt to name emotions, each is just "a feeling" and "another feeling". Without labels for them, it is

difficult to identify his own emotions and think about them, so emotions are less differentiated and less understood. Even in autistic children who acquire language at a normal age, emotional development may be retarded. If language is used primarily for practical purposes such as making requests or giving information, but rarely for social interaction, emotion words, although they are known, are used less. If a child never talks about the emotions of others and rarely about his own, he will lack that part of emotional development that takes place in the context of social interaction.

But the experience of emotion is never, in itself, absent in autism. Even the most severely autistic children have basic biological feelings such as happiness and anger. If some seem not to be experiencing emotion at all, it is not because the feelings themselves are lacking but because the idiosyncratic ways in which they express them are not recognised.

Autism almost always involves some degree of idiosyncratic expression of emotion. Even bright children with Asperger Syndrome, who use cultural expressions normally, may also have some of their own personal expressions and their own individual divisions of experience. Since these are personal and unique they cannot be understood by strangers the way culturally standard ones are, although they may be understood by parents and others close to the child. It is important to appreciate that these personal emotions are just as important and deeply meaningful for the autistic child as standard ones are for normal children. If they are ridiculed or belittled, the child learns to suppress expression of emotion in the presence of others, thus reinforcing and intensifying autistic behaviour. Whatever weak inclination to share feelings he might have had before is replaced by aversion.

7.32 Understanding Emotions and their Causes

Even after an autistic child is able to identify a feeling within himself and recognise it as the same feeling from one time to the next, he may still not be able to connect it to the situation that produced it. It may be some time before this becomes possible, because it involves the juxtaposition of events which themselves might not yet have been recognised. The normal child learns to interpret and explain his emotions. He is taught to connect the feeling with the events that surrounded it and to ascribe a causal relationship to them. Thus he is crying *because* he is sad *because* he dropped his ice cream. This, like common sense, seems obvious, but is really learnt. It is part of the structuring of experience which is part cognitive development. Like the rest of cognitive development, for the normal child most of that structure is supplied by social learning. Independent experience, though important, plays a secondary role. Depending upon severity of autism, an autistic child lacks this social learning to a greater or lesser degree and must develop those structures by himself. Until he does, he is unaware of the connections between his emotions and the situations that give rise to them. Indeed, until he develops a sufficient concept of self he is not aware that it is he himself that is experiencing it. So an autistic child may be aware of having dropped his ice cream, be aware of an intense feeling (although perhaps not that it is his own), and also be aware that he is crying (or perhaps laughing), but not realise that there is any connection between them.

7.33 Cognitive Foundations of Emotion

Cognition is an essential component of all but the most basic emotions. A person cannot become frustrated unless he knows he has been trying to do something and also knows he is not succeeding. Although abstract intelligence is not needed, in that he need not be able to express awareness of either striving or failure, he must have at least sufficient concrete intelligence to be able to imagine something that does not exist, for he cannot try to achieve something unless he can imagine it. Frustration, therefore, requires more than just functional intelligence. The fox need not be able to

imagine grapes, but he must be able to imagine himself eating the grapes that are present in front of him.

Although all autistic children except for those who are severely mentally impaired eventually learn to understand basic emotion words such as “happy” and “sad”, and to recognise the corresponding facial expressions, complex emotions can present a problem even for those who are very intelligent.

One of the first complex emotions to be experienced is *surprise*. It involves two components, an *expectation* and a *realisation* that the expectation has not been fulfilled. Since having an expectation involves little more than becoming familiar with the world and remembering how it has been in the past, only those who are very severely mentally impaired never experience it. Somewhat more intelligence is needed to learn to use artificial expressions of surprise, such as “Oh my!”, which requires differentiating, at least functionally, the feeling of surprise from that of general confusion. Recognising surprise in others is even more difficult, since it requires paying attention not only to the situation but also to the other person. To understand surprise, one must not only be attending to the current situation, but must also have attended to the sequence of situations that led up to it. He must, moreover, remember them all and notice the relationship between them. This is easy for a normal child, because he is inclined to pay attention to human beings, but for an autistic child it may be as difficult as learning to solve complex problems in mathematics is for an average university student.

In emotions such as pride and shame, the cognitive component also involves knowing about the opinions people form about one another as well as a degree of internalisation of those opinions and of social values. Emotional development is therefore dependent upon cognitive development. Since such emotions are not possible until a child reaches an appropriate level of cognition, deficits in cognitive development limit both the range of emotions and the precision with which they can be differentiated.

7.34 Cultural Aspects of Situation

Among the cognitive activities that are part of emotion, one of the most important is *interpretation of the situation*. Since most situations include not only physical but also social aspects, awareness of cultural values and of the social significance of events affects how emotions are felt. For some emotions, indeed, it is a necessary prerequisite. Embarrassment, insult, gratitude and pride involve specifically social elements such as honour, respect, obligation and social status. Whether or not a person feels embarrassed depends upon whether anyone else has seen him and who that person is. A person feels grateful for a favour done by one who has no obligation to him, but not for the same act done by one who does. These emotions therefore only exist for a person who has acquired the necessary social components.

Some complex emotions are, moreover, themselves socially defined. Over and above providing the components, one’s culture teaches him how to respond to such combinations of circumstances. In some cultures, for instance, one is expected to have ambition, and feel pride in his accomplishments, while in others such feelings are considered arrogant and are condemned. Remorse, ambition, envy, and indignation are defined by culture. Children learn them by observing and imitating the behaviour of adults and peers in such situations. Only through social learning can one come to know which situations are considered embarrassing, which uplifting, what is to be perceived as a threat, what as an insult or a compliment. A situation that in one culture evokes feelings of hostility in another might make one feel apologetic. They may even vary within the culture, depending, for instance, upon the social status of the individual experiencing them. Some of these emotions are universal, experienced in all cultures though in different ways. Others are not.

They are experienced in some cultures, but in others they are not felt at all. Differences between emotions in various cultures shows how great the cultural component of emotion is.

7.4 Understanding Emotions in Oneself and in Others

Standardisation of emotion has the important benefits of making one's behaviour more understandable to others and theirs to him, thus contributing to mutual understanding and empathy. This understanding, however, is not attained immediately. Standardisation is a gradual process, and the first steps are only functional. Initially, the child imitates the expressions and sounds of others without understanding their significance. Then, as his own repertoire grows and is refined, he also becomes aware of those emotions in others around him and they begin to recognise his. Learning the word for an emotion and being able to use it more or less appropriately also contributes to this process. Even if he does not understand what the word means, it helps him identify the emotion and directs his attention to it. Thus emotional development bears reciprocal relationships with social development and with the development of language. Understanding emotion words, experiencing one's own emotions, and understanding the emotions of others, all contribute to one another. Sharing of emotions and experiences with others also reinforces identity as a member of a group, and encourages participation in activities with others, in the course of which further social skills and knowledge are gained.

Normal human beings live in the same world as one another, not because they find it that way but because they make it so. Each constructs his world to be like that of the others. It is an active similarity, not a passive one. The normal child learns what he *should* want and how things *should* appear to him. He learns what he should seek and what avoid, what counts as success and what as failure, what counts as pain to which he should respond with cries and complaints, what counts as pleasure to which he should react with joy and laughter.

The autistic child, having failed to do this, ends up in a world that is different, a world of his own. The resultant difference in experience further reinforces autism. It makes it even harder to interact with others, to understand them and to learn from them. Deficits in social learning impair awareness and understanding both of others and of one's own emotions. Emotional development and the development of related areas of language and thought therefore tend to lag behind the rest of linguistic and cognitive development.

7.41 Constantly Changing Nature of Culture

The task of understanding others and being understood by them is further complicated by the dynamic nature of culture, and therefore of the emotions that are part of it. For the normal individual, emotions and modes of expression are not stable. Cultural modes change, and as they do, he readjusts his own to conform to them. The emotional knowledge of the normal individual is therefore not preserved entirely internally. Ultimately, it is the communal knowledge that is the standard, and that of each individual is a reflection of it. He learns and internalises it, and proceeds to function according to that internalisation, but is always ready to modify it to conform to the cultural standard if that should change. Normally this readjustment is not a great burden, since cultural standards rarely change suddenly. Change is generally slow and gradual, and each individual readjusts effortlessly along with his peers. But for one for whom all social learning is difficult, every additional demand decreases the likelihood of success.

7.42 Varieties of Emotional Development in Autism

Even though emotional development is slower than normal, it goes on longer. Intelligent autistic adults often continue to develop beyond the age at which emotions have normally become stable, and some eventually catch up. Development may come in spurts, stopping for a while and then picking up years later. Periods of renewed development may occur in the thirties, forties or even later.

Being exposed to the social world of his peers, the autistic individual cannot escape some small degree of awareness of the emotions around him. Whether this becomes the seed of emotional development depends upon many factors, primarily motivational. Rarely is aptitude itself lacking. The deciding factor may be personal inclination and interest, or it may be the encouragement of a friend or family member. Some intelligent adults have little interest in becoming or even appearing normal. Especially those who have found a niche in which they are accepted as they are, whether it be as a successful scientist or musician or as a recluse, may be content with their identity and social position and may even fear becoming more like other human beings. Some may not realise how unpleasant their insensitivity to the feelings of others can be or that others look down upon them for their selfishness or hot tempers. Lacking the positive feedback between awareness, skill and motivation that normally propels emotional development, they remain emotionally immature.

In those autistic children who are mentally impaired, emotional development proceeds in abnormal ways. On the one hand, each eventually accumulates a repertoire of private emotions. But many also develop unusual sensitivity to moods and feelings of others. They become agitated in the presence of those who dislike and reject them, and quickly become comfortable with those who are genuinely friendly to them. They are not fooled by false demonstration of friendliness, because their sensitivity is to natural biological indications rather than to standard cultural expressions. The cognitive structures they have formed for interpreting human behaviour are different from those of normal children. They accept different data and process them differently.

7.5 Functions of Emotional Expression

Although the outward expression of emotion is the vehicle by which the social moulding of emotions is achieved, that is only one of several important functions that it serves. Its primary function is to *share emotions* with others. Human beings derive comfort from sharing their pain and sorrow with those who sympathise with them, and derive pleasure from sharing their joy. Another is to *strengthen social bonds*. By laughing at each others' jokes and by expressing sympathy for them when they are suffering, they show their affection and concern, thereby increasing mutual friendship. They laugh at jokes even if they don't find them funny, because to fail to laugh would indicate lack of affection and perhaps even hostility. Casual acquaintances laugh together to indicate their desire to increase the feeling of friendship between them. This social laughter is also used as a way of currying favour with those who are more powerful or from whom one hopes to gain. As such it is not an expression of genuine emotion but rather a submissive behaviour comparable to and perhaps even related to the pant-grunt behaviour of chimpanzees.

Expression of emotion can also serve simply as a way of *conforming to cultural norms* and thereby maintaining one's social acceptability. Members of a social group need to continually conduct themselves according to its conventions to actively maintain their group identity. If they fail to, they risk being looked upon as odd and foreign, and perhaps eventually being rejected. Rarely is such culturally standard behaviour intentionally practised for this purpose. Generally, for one who identifies as a member of the group, it simply seems to be the natural thing to do. Nonetheless, it has the effect of reinforcing his acceptance in the eyes of the other members. So even when expression of emotion serves neither of the specific purposes of sharing emotion or of strengthening personal social bonds, it is valuable for its more general social function.

7.51 Autism and the Development of Emotion Sharing

In autism, use of emotional expression for these purposes, if present at all, tends to be weak. Many autistic children have no desire to share their feelings. When they express emotion, it is simply a behaviour that is evoked by the feeling they are experiencing, such as crying when sad or jumping up and down when excited. It is like the emotional expression of infants. There is no intention to communicate their feeling to others, to make an impression, or to elicit a response. It has essentially nothing to do with other human beings. They do not laugh or cry because they want someone else to see them and to feel a certain way towards them. They laugh because they're happy and cry because they're sad.

Lack of desire to share emotion may be partially innate, but is partially due to failure to learn patterns of emotion-sharing which are normally acquired by social learning. When the autistic child rejects his caregivers' caresses, it may be not because he does not want comfort, but because he does not understand that they are trying to comfort him. Sharing emotion is one of the behaviours that is part of infant-caregiver interaction. In the course of early social development, expression of emotion gradually evolves from automatic behaviour arising from inner feelings to a form of communication. By early childhood, normal children realise in a primitive way that others understand them and sympathise with them. They know that when they hurt themselves they can come to Mummy and she will hold them and comfort them. They know that when they are happy and excited, others act happy and excited too. This is a cyclical developmental process in which proficiency at conventional expression and awareness of purpose evolve together and reinforce one another.

Thus there are two sources from which the normal child learns to share emotions. The first is his own spontaneous emotional expression. Even though it is originally produced without the intention of sharing, it evokes responses in caregivers and the child then experiences their coordination with his own emotions. The second is the behaviour of others, which serves as a model of emotion-sharing. Sometimes he understands the purpose of that behaviour. He then becomes able to use it himself. Other times he simply imitates it as he imitates other behaviour, for no particular purpose. Gradually, spontaneous expression produced without any purpose is replaced by culturally standard expression until it all but disappears.

Attention to other human beings is essential for this process, because the child must notice the coordination that takes place between his feelings, his own behaviour, and the behaviour of others. An autistic child who does not pay sufficient attention to other human beings may not even notice that another person is laughing or crying. These are but background events in his world. Without attention, he doesn't learn from the emotion-sharing behaviour of others. When they share their feelings with him he is not interested. Even an older intelligent autistic child who listens politely may be understanding only the words but not their significance, so they do not become a model for him. If, in addition, he has not developed a clear sense of his own identity, he may not understand his own feelings or the significance of his own emotional expression either.

Many autistic children do begin some emotion-sharing by middle childhood. Although it is later than normal and also less extensive, it nonetheless indicates that they have the capacity to share emotion, and therefore that whatever the innate bases for sharing emotion are, they do not entirely lack them. Some children, however, never share emotion at all. Of these, there are some who lack sufficient intelligence, but there are others who have no desire to share their feelings even though they clearly understand what it means. Sharing emotion gives them neither pleasure or comfort. When they are happy, it makes no difference to them that someone else is happy too, and when they are sad, another's sympathy does not lessen their sorrow.

7.52 Influencing Others

The use of emotional expression to impress and influence others is learnt similarly. The normal child learns cultural patterns and practises them naively. He watches other human beings and imitates their behaviour. He learns to use words and facial expressions as they do, and though his first attempts may be crude, he gradually refines them to achieve the desired results. The skill he eventually attains is the product of long years of development.

During the first few years, when normal children are laying the groundwork of using expression of emotion for social purposes, the autistic child has not yet begun to notice the emotions of others. The thought that his own behaviour might somehow influence the way they treat him has not yet entered his mind. By the time it does, which, for autistic children of normal intelligence generally happens in early school years, other children are already so much more advanced that his own attempts are too crude to be effective. Though he now realises that it can be useful to impress others, he does not appreciate the skill it requires and the practice needed to develop it.

Most intelligent autistic children eventually learn to use expression of emotion well enough to fall within the normal range. There are some who, through devoted study and careful practice, achieve exceptional skill, surpassing those who arrived at it naturally in the course of their development. They achieve the skill of an actor who can deliver a convincing performance that is unrelated to his actual feelings. On the other hand, there are some who are reluctant to indulge in such behaviour even if they are able. Laughing at a jokes they do not find funny seems dishonest. Unbending commitment to honesty prevents them from distinguishing between using laughter to curry favour, which can legitimately be condemned as hypocritical, and using it magnanimously to encourage another person or to smooth social relations.

7.53 Implications for the Course of Emotional Development

Autistic children therefore develop emotions in a fundamentally different way than normal children. Normally, communication of feelings develops together with emotions themselves. The child does not have two ways of expressing an emotion, a public one for the benefit of others and a private one which is just the way he acts when he has that feeling. There is only one, which has developed to serve both purposes together. Since no entirely private expression has ever developed, he uses the public mode even when there is no one around to observe him. Furthermore, since emotion-behaviour is in origin a public activity, the thought of impressing others is never completely absent from his mind. It is directed toward a hypothetical observer even when no real observer is present. In autism, however, the two are distinct, so even after the intelligent autistic child or adult has perfected communicative emotion-behaviour, there may remain much emotion-behaviour that is still private.

When emotions do not develop in the normal ways and at the normal times, the resultant abnormal expression is an additional impediment to socialisation, further interfering with emotional and social development. Cultural conventions for expression of emotion are part of the broader category of cultural behaviour, all parts of which develop together and contribute to one another. So an autistic child who eventually realises the value of sharing emotions with others must then embark on the long cyclical process of learning and constructing the many pieces that he is missing and gradually fitting them together.

8. Social Learning and the Need for Regularity

Standardisation of behaviour has far-reaching effects on physical as well as social aspects of life, on food, clothing, and all of the physical environment. Since cognition, perception and feelings are all

moulded by behaviour, external standardisation produces internal standardisation as well. The way the world is experienced is standardised. As a result, the world as modified by society is pleasant and comfortable.

Society strives to satisfy the desires of its members and protect them from those things that disturb them. Since it modifies the world to be hospitable for the normal member, the closer an individual is to the norm, the more agreeable it will be for him. But if one fails to become standardised in this way, his personal world may end up radically different from theirs, so he may find the outside world, as modified by society, unsatisfying and even irritating.

The regularisation of life by culturally guided social interaction, which, as we discussed earlier, helps satisfy the natural human need for regularity, can now be seen as part of the complementary modification of the individual and his environment. Culture regularises time by schedules, space by territories, members of society by social status, and their behaviour by dress codes, manners, patterns of conversation, and melodic patterns of speech. For those who have adopted the values of their culture and understand these social patterns, life becomes more predictable and therefore more comfortable, and they are relieved of the need to regularise experience themselves.

But human beings do not want complete regularity and predictability. They also want a certain degree of variety and surprise. For, while too little regularity is confusing and disorienting, too much is boring. For every individual at any given time there is an optimal balance. From that optimum there is an acceptable range of deviation. The level of regularity that society provides is adjusted to the needs of most of its members in most situations. Functioning as a system governed by positive feedback, society tends to adjust those levels to keep them as close as possible to the optimum for the most members.

Of course, that adjustment cannot be perfect for all individuals at all times, so most individuals occasionally need to modify the socially provided level of regularity. That modification is as often in one direction as the other. Sometimes they are bored and seek excitement, at other times they find life too stressful and just want a quiet evening at home. For those who are autistic, however, the regularity provided by society is usually insufficient, so modification is in the direction of regularity. Since they are missing some of the social regularity, the total regularity they experience is less than that of others. For an autistic person whose optimal level of regularity is normal, the regularity of the world as modified by society will be insufficient and he will need to supplement it.

8.1 Mechanisms by which Regularity is Increased

Few individuals, autistic or otherwise, are aware of this human need for regularity or of how it is fulfilled. Their attempts to maintain their own regularity within the acceptable range are rarely consciously directed toward this goal. They do not think of themselves as regularising their experience, but simply as choosing among normal life activities. Yet whether they realise it or not, level of regularity is one of the factors in their choice.

What sort of activities are available to an individual depends upon his intelligence and the degree of his development. Rocking and hand-flapping are purely physical activities, available even to those who are mentally impaired and to infants who have barely begun to develop. They help fill the child’s day with predictable and understandable experiences, thereby reducing the portion left for chaos and keeping the ratio of chaos-to-order at an acceptable level. They enhance the child’s ability to function in the world by structuring it in a way that he can understand and can deal with.

Rituals and compulsive behaviour are more complex, so they require a considerable degree of cognitive development. They are only available to those who are able to appreciate similarities, differences, and patterns. They are also more powerful, and can be used to facilitate social interaction as well as regularising the physical environment. Young autistic children and adults who are mildly mentally impaired sometimes develop rigid patterns of conversation, such as asking

everyone “What colour is your house?” In this way they gain some control over the social situation, changing it from one that is open-ended, unpredictable, and frightening to one that is structured and limited, and therefore manageable and safe. Organising the behaviour of others so that they are able to participate in social interaction is similar to the structuring of social interaction that normal people accomplish by talking about the weather. The significant difference is not that the autistic behaviour is more limited and rigid, but that since it is not shared by other members of society, it does not simultaneously satisfy the interlocutor’s own need for regularity. This is characteristic of most autistic regularisation-behaviour. The activities themselves are not unique to autism, but the specific form in which they are practised is helpful only for the autistic individual who performs them, and not for others around him.

In discussing regularisation behaviours, the terms “rule” and “schedule” should be reserved for patterns that the child recognises and is able to state explicitly, thereby distinguishing them from rituals and compulsions which need not be stated explicitly. Children who have no language whatsoever, that is, who have no symbolisation, can have rituals, but they cannot have rules. For those who do symbolise, the borderline between ritual and rule is not always clear. Once a ritual begins to include statements of how things must or should be, it is becoming a rule. Language in itself, however, does not make it a rule. Statements, especially those that are purely descriptive, can be present even if it is just a ritual. Aside from requiring symbolisation and abstraction, rules and schedules are *social* as well as *cognitive*. This is of great significance, because it means that they are only available to those who have begun to gain some appreciation of social order.

It is also important to remember that the activities an individual uses are not restricted to the highest level of which he is capable, but generally involve a combination of the various levels. Ability to regularise life socially and cognitively does not preclude making use of purely physical regularisation as well. Even an intelligent adult who is not autistic may drum his fingers on the table when things are not going to his liking. Activities like this not only mitigate the feeling of helplessness but also inject a degree of predictability into life when it has got out of control.

8.2 Other Reasons for Rigid Behaviour

The need to maintain an acceptable level of regularity is not the only reason for rigid behaviour in autism. Strict adherence to rules is sometimes due simply to lack of awareness of the unstated flexibility incorporated in them. Normal children learn rules primarily by copying the behaviour of others, so they practise them as their models do, with all the deviations and inconsistencies. In this learning process they pass through several stages. First they imitate individual behaviours without being aware that there are rules governing them. After a while they begin to recognise patterns, and some of the individual behaviours that they already know now become special cases of general rules. Soon after that, however, they start overextending the rules to cases to which they do not apply, as in the well-known phenomenon of over-regularisation of grammatical forms. Many children who at first correctly learned the individual words “mouse” and “mice”, after grasping the general rule for formation of the plural produce the incorrect form “mouses”. After that, they become aware of their error and return to the correct form, pushing the borderline of the rule back until it rests at the correct place. The feedback and correction in the natural learning process guarantee eventual adjustment. However complex and subtle the rules are, the normal child gradually revises his behaviour over and over until he gets them right.

In autism, by contrast, rules of behaviour are more often learnt through explicit statements. Typically, the autistic child is at first unaware of the rule and completely ignores it. When he reaches the age at which most children have discovered the rule on their own and are behaving accordingly, his neglect attracts attention. Few realise that unlike a normal child who recognises the rule but disregards it, he is genuinely ignorant. He is then criticised and told the rule explicitly. At

this point, there are several different courses that development can take. He may not be able to understand the rule, and attempts to teach him end in conflict and frustration. He may understand it but take the criticism as an affront and resist it. Or he may not only accept it, but proceed to adopt it with absolute rigidity. If he learns that he must wash his hands before eating, he may become unwilling to relax this requirement when no water is available and go without food for hours. Or he may misunderstand the internal flexibility of the rule. Having learnt that a certain food should be cooked for ten minutes he insists that it always be cooked for exactly that long, not a minute more or less. He may infer, furthermore, that there is an exact correct cooking time for every food, and will not cook a new food until he learns it.

Many autistic adults are unaware that others find their insistence annoying. Since they don't pay much attention to those around them, they don't notice their annoyance, or if they do, do not realise that it is caused by their own behaviour. Even if they become aware of all this, they may not understand why. After all, they are demanding nothing more than the rule that everyone agrees is right. How could anyone find fault with that?

The normal person understands that most explicitly stated rules are not meant to be absolute. Food does not need to be cooked for an exact number of minutes and ingredients do not need to be mixed in exact amounts. The basic rule is correct, but there is a considerable range of tolerance. In social rules, flexibility is even more important, because the real rule not only tolerates but in fact demands it. The subtle conventions that modify the basic rule are themselves an essential part of social regularity. Strict adherence to the explicit formulation of the rule is not only over-regularisation, but indeed a violation of the regularity of the unwritten conventions. It is because the autistic person has failed to learn these that he regularises incorrectly. Furthermore, failure to learn and therefore to appreciate these vast complexities actually decreases the overall regularising effect of the rule, so the level of regularity provided by it is lower than it is for normal people. Instead of an endless wealth of interrelated complex rules, he has a limited collection of simple ones. This is yet another reason standard cultural rules fail to provide sufficient life-regularity for the autistic individual.

In autistic inflexibility we again see the lack of coordination characteristic of autism. It is not the actual level of regularity that the autistic individual achieves that is abnormal, nor even the kind of activities he uses to achieve it, but that the specific ones he employs are not the same as those used by others around him, so instead of making him more coordinated with them, they make him less so.

The contrast between social and autistic regularity reveals the multiple functions of socially derived regularity, which serves both the individual and society as a whole. Society functions better because its members are coordinated with one another, and each individual member is better able to conduct himself in both social and physical worlds. Autistic regularity, by contrast, serves only the individual.

8.3 Social Regulation of Values and Priorities

In addition to teaching its members how to experience the world and how to organise that experience so that it will be understandable and manageable, society teaches them which things are to be considered important and which should be ignored. This radically affects their experience of regularity, because regularity can only apply to those aspects of the environment that are noticed. The normal child learns which sorts of regularity to care about and what degree of similarity is necessary to be considered regular. In certain areas slight differences are significant, in others they are not. Some differences are noticed but tolerated, others may not be noticed at all. One way by which society teaches this is by regulating some things and not others. Going a few miles over the

speed limit is acceptable, giving a few pennies too little in change is not. The normal individual learns this, and is thus trained to care about what society cares about and ignore what it ignores.

These values can only be learnt at an advanced cycle of social learning, because they are predicated on the social modification of perception and cognition. Having already adjusted his perception to conform to that of society, to notice certain things and be oblivious to others, the normal individual is ready to learn their significance.

For an individual whose feelings, thoughts and values have been standardised this way, the aspects of experience that society regularises turn out to be exactly the ones that he cares about and whose regularity he craves! His are the same as those of the other members, and society adjusts itself to provide for those needs that most of its members have in common.

With respect to this too, society is dynamic, not static, and the relationship between the individual and society is reciprocal. When a new situation arises, society's response will depend upon how its members are affected by it. If many of them are disturbed, many will seek to remedy it and it will be resolved. But if only a few are bothered, it will not be addressed. The individual member, for his part, is continually modifying and updating his behaviour and values to conform to those of the group.

The normal individual identifies with society. His relationship to society is not one of "me" and "them" but of "us". This reduces his practical need for regularity. He doesn't need to be able to predict what will happen next or to know what to do when it does, because he can rely upon others. There will always be some who know, and he will be able to follow them. The collective intelligence of the group supplements his own personal intelligence. He feels confident that whatever happens, it will be alright for him, because his needs and desires are like those of the others, and as they strive collectively to have them fulfilled, his will be fulfilled along with the rest.

But the autistic child misses all this. First, since he fails to learn the patterns of behaviour of others, the human part of his environment remains chaotic, confusing and frightening to him. He is unable to see the patterns in it, so he cannot predict what will happen next. Secondly, not having adjusted them to conform, his priorities and regulation of sensory input are not the same as theirs, so the regularised environment created by society does not fulfil his needs. Like others, he does not require everything in his surroundings to be in order. His need for regularity, like theirs, is limited to certain aspects, sometimes a very few which serve as an anchor. The rest can vary and may not even be noticed. But no matter how few his needs are, if they are not the ones society addresses, he may find that they are not being fulfilled. The things society regularises may be ones that he doesn't care about or even notice, while it may ignore some that are important to him. Moreover, since he doesn't identify with society, he is on his own. He must adapt and figure out what to do all by himself. If indeed the autistic individual's need for regularity is greater than normal, it is due to this last factor, the need to adapt independently.

8.4 Fights, Rage, and Stubbornness

Normal children live in pretty much the same world as their family and peers, and as they get older and continue to learn and internalise cultural norms it becomes increasingly so. The autistic child does not. His expectations are different and the world appears different to him because he interprets events differently. He finds their world chaotic and frightening, constantly irritating and stressful. It seems to always be at odds with his. When he can, he avoids their world and withdraws into his own. When he cannot, he is left prone to fights and rage.

Social demands are experienced very differently by the autistic child than by the normal one. For the normal child, they fit into the patterns of behaviour that he has already adopted. Standing in a queue involves such basic components as being near other people, some of whom may be strangers, smelling them and perhaps being touched by them. It involves doing what others around

are doing, and gauging expectations (when your turn will come) on the basis of the actions of others. As hard as waiting patiently may be for the normal child, who has all these components, it is much harder for the autistic child, for whom the components themselves are foreign.

The first reason for intensity of the autistic child's resistance to social demands lies therefore in the way they are experienced by him. What for the normal child may be merely annoying, for the autistic child may be too painful to bear. This alone could make the autistic child strong-willed and stubborn. In addition to the difference in his experience of social demands, is his lack of culturally derived patterns of thought and behaviour, which the normal child has learnt and internalised. Significant among them are behaviours of compliance, which are a necessary component of all human cultures. Every normal child learns in which situations one may resist and fight, and in which he is expected to give in and comply. Only part of this is the recognition of the futility of trying to resist superior strength. More often it is simply an internalisation of social norms. School children disobey their teachers, but only up to a point. Imitation of peers, even more than gauging the seriousness of the anger of adults, teaches them what the limit of tolerance is. An autistic child, however, may not even be aware that most others, in his situation, would give in.

Fights and temper-tantrums are also a persistence of infantile modes of behaviour due to failure to learn more mature and effective ones. It is normal for a baby to scream and contort its body when it is in discomfort. It has no way to communicate its needs, nor is it aware that there are other beings around who might help fulfil them. The three year old throws himself on the ground and screams when he is tired of walking and his parents insist he go on. When an autistic child continues such behaviours after his normal companions have abandoned them, it is seen as a failure to develop the self-control appropriate for his age, but lack of receptiveness to social moulding is a greater factor than lack of maturation. The normal child concedes his own desires in deference to the demands of others not because he understands why he cannot have what he wants, but because he has been trained in certain modes of behaviour. Socially acceptable responses have been reinforced while rage have been extinguished by punishment. Lack of social learning is therefore one of the most important reasons for stubbornness and inappropriate response to demands.

9. Miscellaneous Traits

As we have already seen, there are various phenomena that have been especially problematic for earlier theories of autism. They include superior abilities, deficits in areas unrelated to social interaction, and other abnormalities that do not seem to be connected to the rest of the syndrome. For some of these, deficits in social learning can offer plausible explanations.

9.1 Laterality

It has been found that there is a relatively high incidence of left-handedness in autism. The ratio of left to right-handed individuals is more or less the same in all populations, races and cultures. Generally, about one in seven is left-handed. Among those who are autistic, however, the percentage is higher. This does not seem to have anything to do with Theory of Mind, Executive Functions, or even the processing of sensation. Once we dispel some common misconceptions, however, the connection between laterality and social learning becomes obvious. First of all, laterality is neither a strength nor an ability but a *tendency*, the tendency to use one hand in preference to the other. The dominant hand is neither innately stronger than the other nor does it have an innately greater aptitude for skill or ability. Superior strength and ability are secondary characteristics of the dominant hand, resulting from greater use. When, for whatever reason, the less preferred hand is habitually used, it becomes dominant, and develops the strength and skill that would normally be attained by the preferred one. In cultures in which left-handed children are forced to write with their

right hands, they develop normal writing skills with that hand. Left-handed musicians develop skills equal to those of right-handed ones, even on those instruments in which the more demanding task is assigned to the right hand. So too, victims of paralysis or injury to their dominant hand develop skills and strength in the other. In spite of years of disuse, development is still possible. Although the degree of development varies from those who completely regaining their original dexterity to those who remain forever clumsy with their one functional hand, the deciding factors are motivation and training, not innate potential.

It is also significant that laterality is not absolute. Most right-handed individuals have some left-handed tendencies as well. The preference for one hand over the other is also stronger in some than in others. Some children favour one hand consistently and strongly, some mildly, and a few seem not to have any lateral tendency at all. This is clear in early childhood. Some children consistently reach for and manipulate objects with the same hand, others sometimes use one and sometimes the other in varying proportions.

The weaker the preference of one hand over the other, the greater will be the role of other factors in determining which is used most and therefore becomes functionally dominant. Chief among these is social influence. For those whose tendency toward left-handedness is weak, casual social training may be sufficient to shift it, even without specific efforts of teachers. There are several contexts in which such casual training takes place. One is games and other activities that, having been created by a predominantly right-handed population, tend to favour the right hand. Similarly, the use of artefacts that are designed for right-handed use promotes this preference.

Another context is social interaction in which one partner faces the other and they interact by means of corresponding, not opposing hands, such as in hand-shaking. Even in infancy, caregivers generally place things in a child’s right hand, since that is the way they are accustomed to giving things to others. For those children who are only weakly left-handed, the habits produced by these activities become stronger than the natural tendency to use the left hand, so they become functionally right-handed. It is in this group, in which the tendency toward using the left hand is mild, that development may proceed differently in autism. Being less prone to the influence of social learning, autistic children develop according to their natural inclination and therefore become functionally left-handed. Those who have a strong tendency to favour the left hand, however, will be left-handed whether they are autistic or not. Even if they are forced to write and perform certain tasks with the right hand, they will still use the left hand whenever possible.

9.2 Absolute Pitch

Absolute pitch is the ability to recognise the pitch of a sound without reference to another sound heard shortly before. *Relative pitch* is the ability to recognise the relationship between the pitches of two sounds heard at the same time or one shortly after the other. Most normal human beings have fairly good relative pitch but do not have absolute pitch. They can recognise a note a fifth above one they have just heard, so if they have been told that the first was C, they know the second was G. Even if they have not learnt the names of the notes, they can recognise melodies. However, they cannot recognise G if it is played alone more than a short time after hearing C or another reference note. Within absolute pitch, there are also differences in precision. *Perfect pitch* is very precise absolute pitch recognition. One who can recognise G but cannot tell whether it is a quarter tone sharp or flat has absolute pitch, since he knows it is not F sharp or A flat, but does not have perfect pitch. Absolute pitch recognition is similar to the ability to recognise colours. Most human beings can recognise red or green without reference to a sample. That is, they have absolute recognition of colours. Individuals differ, however, in the precision with which they can recognise shades of a colour. The term “absolute pitch” is sometimes used to mean “perfect pitch”, but we shall use it in the more basic sense.

It has been found that the prevalence of absolute pitch is unusually high in autism. Even though only a minority of autistic individuals can recognise pitch absolutely, they are a higher percentage than in the overall population. In keeping with the commonly accepted belief that absolute pitch is innate and cannot be developed by anyone who was not born with it, this has been seen as yet another innate trait of autism that is not related to the main three categories. Research during recent decades, however, has shown this assumption to be mistaken. Most young children can be trained to recognise absolute pitch even if before training they could not. Many adults can as well, although it tends to be harder for adults than for children. There is indeed no evidence that the ability itself is ever innate, although the ease with which it is developed and the inclination to develop it may well involve innate factors.

This casts pitch recognition in an entirely different light, and its prevalence in autism becomes less mysterious. Culture defines which direction a child's development will go and prescribes what is to be included and what left out. It also trains him in techniques and patterns of learning which make certain kinds of things easier to learn than others. Since absolute pitch recognition is not among the expected skills in our culture, the normal child is not encouraged to go in that direction. Only those whose inclinations are especially strong or who are particularly sensitive develop it. Moreover, the kind of auditory recognition that it involves is not the sort of thing normally acquired by formal training in contemporary Western culture. Even music training emphasises relative rather than absolute pitch. Social training therefore not only does not facilitate development of absolute pitch recognition but actually interferes with it. In autism, where development is less influenced by culture, individual inclinations and circumstances play a much greater role in determining which abilities will be acquired. This also explains why normal adults are less receptive to pitch recognition training than are small children, whose thinking has not yet been as extensively socially patterned.

9.3 Clumsiness, Gait and Posture

Clumsiness is certainly not a universal characteristic of autism. On the contrary, some autistic children can be quite graceful. Nonetheless, a certain degree of clumsiness is associated with autism. Some of this may simply be the result of failure to learn socially prescribed behaviour, especially as it applies to everyday activities such as walking and eating, and to handling artefacts. Social conduct is especially difficult for autistic people to learn because most of it is never explicitly taught or even stated. Members are expected to learn on their own. The autistic child who does not pay attention to how others do these things and simply does them however he finds convenient, is considered rude, clumsy or just strange. Especially in those cultures in which social rituals are particularly numerous and intricate, those who fail to learn them or who learn them imperfectly will appear awkward and inept. In cultures in which behaviour is relatively informal, the difference will be less noticeable.

Attention to the task or the objects involved alone, and not to the behaviour of others who have already mastered it, can also result in actual clumsiness and poor technique. Normal children model their own actions on those of others, so if there are others who are already skilled at a task, they imitate them and learn to do it skilfully. They have not figured it out themselves, nor do they possess natural grace or skill. Even if it takes them a while to master a task, directing their efforts toward copying the method of others who are already proficient, makes it easier for them to succeed. These culturally transmitted methods are generally superior to any that an individual might develop himself, since they have been perfected over the course of many years and generations. But an autistic child may not even notice how others are doing something. He applies himself to the task, and may or may not succeed in discovering a way to accomplish it. But even when he does, his method is rarely as efficient or graceful as the culturally developed one.

Independently developed techniques may also be socially unacceptable for other reasons. In some cultures, certain activities such as throwing a ball are performed differently by boys than by girls, even though there is no anatomical reason for the difference. Autistic children who develop them without social guidance are liable to end up performing them in a way that is culturally inappropriate for their own sex.

One of the first things one notices about many autistic children and adults is their unusual facial expression and posture. Some sit completely slouched over, like a sack of potatoes that has been dropped on the chair. Others are stiff and tense. Here too, the variation in conventional postures and facial expressions across cultures shows that any of these might be normal in a different time or place. The abnormality in autism is not in the act itself, but in the failure to acquire cultural norms.

9.4 Artefacts

Between the social and the physical worlds lies the world of physical artefacts, which are, unlike natural objects, the creations of human beings, and their designs the products of culture. Interaction with artefacts can, as we discussed earlier, be a source of social learning and a bridge to communal intelligence. But the cultural aspect of an artefact can also present difficulty for one whose social learning is deficient. An artefact is designed to be used according to the conventions of the culture. Interaction is easy for one who has already internalised those conventions. It may even seem natural. For one who has not, however, it can seem foreign and incomprehensible. The very movements needed to operate it may be difficult to perform.

When a kindergarten teacher labels the children’s coat hooks with pictures of familiar cartoon characters, it is helpful for normal children because they recognise them and quickly learn which is theirs, but not for an autistic child if he does not enjoy watching cartoons and all the characters look the same to him. If he understands that they are really different from one another, he can, with some effort, learn to recognise his own, but if he does not even realise that, distinguishing between them becomes a mystery. It may seem that the other children have a secret ability to find their own hooks.

Machines are generally less problematic for autistic children than other artefacts because they must conform to the physical world, so they are less arbitrary and understanding them is less dependent upon social learning. Autistic children who have the aptitude and inclination to explore machines and discover how they work can become impressively adept at them. Furthermore, mechanical skills and knowledge are cumulative. The basic skills that children learn by operating their first machines, such as mechanical toys, can later be applied to more complex ones. Growing up exposed to a mechanised culture, they gradually amass a body of machine-related skills.