Chapter 3

Unravelling the Nutrition Complex

During this century, the impact of war and famine on the innocent and helpless child has been a mainspring of international compassion. At times of natural and man-made disaster, the plight of the hungry child epitomizes human suffering and conjures extraordinary flows of public generosity. In the post-colonial era, the same image has been used to symbolize acute disadvantage in the countries of the developing world. But outside the provision of basic relief for emergency victims or in cases of extreme deprivation, what to do about hunger and malnutrition has been one of the most difficult of all human development problems to analyse and address. More mistakes, and more crass mistakes, have been made in this field than perhaps in any other. The reason is that hunger and malnutrition are symptoms not only of casualty and disaster-induced stress, but of a phenomenon far more fundamental, more complex, more varied in both its nature and its settings, and less temporary in its manifestations: poverty.

When Unicef came into existence, there was one central idea in its institutional mind: to provide extra rations—mostly milk, but some vitamins and cod-liver oil—for feeding hungry children in countries torn apart by war[1]. Its earliest form of programme assistance was cargoes of skim milk dispatched to Europe, and later further afield to Asia, Africa and Latin America, for use in schools, clinics and refugee camps as dietary supplements. This was a time when the particular alchemy of milk—its blend of animal fat and protein, vitamins and minerals—was believed to eclipse all other potential solutions for responding to the problem of the undernourished child. Unicef not only became a major recipient and exporter of US surplus dried skim milk to parts

of the world where milk was in short supply, but also provided pasteurization and milk-drying plants to countries whose dairy industry was primitive. Unicef's early approach to child nutrition was encapsulated by the observation expressed in a 1951 report by a technical mission to Central America: 'Civilization follows the cow.'[2]

As the 1950s progressed, Unicef's attention became more focused on the needs of children in poor and backward parts of the world where neither cows nor dairy industries were much in evidence. For these environments, the perception of malnutrition in children became dominated by the results of a nutritional exploration of the African continent by leading WHO/FAO authorities[3]. The resulting study, published in 1952[4], concentrated on kwashiorkor, a condition in young children first described in West Africa in 1933 by a British physician, Dr. Cicely Williams. The cause of kwashiorkor was ascribed to lack of protein rather than to some more generalized cocktail of food and nutrient deficiency. 'Protein malnutrition' was now identified as the number one malnutrition 'disease' the international community ought to address, not only in Africa but elsewhere. It was talked of as an epidemic, like measles or diarrhoea. This implied that it could be treated by the consumption of a dietary medicine: protein. From this point on, the need to fill the 'protein gap' became the predominant thrust of WHO- and FAO-led nutritional policy.

In many tropical settings, this 'gap' could not be filled by milk—or not, at least, by locally produced milk. Accordingly, from the mid-1950s until the mid-1970s, a great deal of international resources and energy were expended on trying to develop cheap, locally manufactured protein-rich equivalents[5]. This was the heyday of belief in technology as a means of solving such world problems as hunger and this new slant on it: the 'protein crisis'. Unicef was deeply involved in the scientific quest centring on pulping and grinding oilseeds, peanuts, soya beans and fishes, conducted under the auspices of the UN Protein Advisory Group. But the experiments failed to produce foodstuffs that were viable. Most were either unpalatable or far too expensive; a few were even poisonous. Only in the late 1960s did Unicef, which had subsidized food plants in Indonesia, Algeria, Chile and Guatemala, finally reach the conclusion that to put a factory between the poor and their food supply simply put the food in question out of reach[6].

In the 1970s what was dubbed the 'Great Protein Fiasco' was finally exposed[7]. Nutritionists had reconsidered whether protein deficiency was really the demon of malnutrition, and most now concluded that calorie deficiency was at least as much to blame. Some eminent practitioners were now singing a

very different song about the deficiencies of local diets. In most areas of the world some combination of familiar cereals and legumes, beans and pulses constituted a perfectly adequate diet for children as long as it was palatable and they ate frequently and were able to absorb enough of it. Only where the basic staple was a starchy root with almost no nutritional merit, such as cassava, was there a need for fundamental change in what went onto the young child's plate[8]. In this scenario, malnutrition was less a disease than a condition induced by inadequate feeding of the young child, partly out of ignorance, partly because of the household food shortages associated with seasonal change and with poverty.

If energy, not protein, deficiency was the main feature of childhood malnutrition, it followed that the problem must be addressed as one not only of public health, but also of outright lack of nutritious food. A new approach adopted by Unicef in the 1960s and 1970s—'applied nutrition'—was based on small-scale agriculture, livestock-raising and horticulture. It used appropriate technology—improved versions of traditional techniques—to increase poultry output and vegetable crops, store and preserve food better and cook it in fuel-efficient ways[9]. All of this was to be taught to mothers. In the more enlightened programmes, these measures were meant not only to help women improve their children's diets, but also to increase their incomes from expanded food production, processing and sale[10].

The early 1970s was a time of severe food shortage and famine in parts of Africa, notably in the Sahelian countries and the Horn in 1973-74. The fall of Emperor Haile Selassie, whose regime was destabilized by famine in the northern provinces of Ethiopia, drew attention to the role of political economy in hunger and malnutrition. The presence or absence of food on the child's metaphorical plate depended on a multiplicity of factors. At the UN, as the Protein Advisory Group was disbanded and a Subcommittee on Nutrition took its place, the place of nutritionists as key policy advisers was for a time assumed by economists and planners[11]. The connections between poor diet, gross poverty and underdevelopment were thrown into sharp relief by the 'world food crisis'—a temporary hiatus in supplies induced by the disastrous world harvest of 1972 (followed by another in 1974). This re-concentrated the global mind on the problem of world hunger and led to the 1974 World Food Conference.

From this point onward, hunger and malnutrition attracted considerable attention as the outcome of skewed political and economic power relations, and—as time went on—of environmental stress. Poor nutrition was seen as a disease of the international body politic, not of the small human frame. The emphasis was on the national food supply, on agricultural policies that ignored

food production, especially by the smallholder and especially by women, in favour of exportable cash crops. In due course, analysts were to distinguish between *national* food security and *household* food security, and between the different factors that affected the distribution of food within different social units. In the meantime, Unicef continued to try to find ways to tackle poor child nutrition via interventions of various complementary kinds—public health, small-scale agriculture, appropriate technology, the organization of women's groups—which did not require waiting until the whole problem of poverty was solved.

In the late 1970s, the development of the primary health care approach and its absorption of the latest thinking on the diagnosis and treatment of childhood malnutrition brought nutrition back into the public health arena. The compounding biological relationship between poor nutrition and childhood disease became the outstanding theme: reducing the degree to which children suffered from common infections would reduce malnutrition, and vice versa. The impact of rapid urbanization and the advent of the 'consumer society' on child nutrition in some environments also were causing increasing alarm[12]. Slums and squalid shanty towns were rapidly springing up in all parts of the developing world, especially in Latin America. This was leading to a new phenomenon of childhood malnutrition: a significant decline of breastfeeding in favour of the bottle in environments where mothers had neither the wherewithal nor the knowledge to prepare adequate and safe solutions of infant formula[13].

By the 1980s, questions relating to feeding for the weanling and the toddler had become overshadowed in Unicef by other preventive activities, such as immunization, good hygiene and prompt attention to diarrhoeal infection, with which they were interconnected. Crude estimates doubled the risk of dying from a given disease for a mildly malnourished child, and multiplied it by 11 times for a severely malnourished child[14]. Micronutrient deficiencies were also now regarded as complicit: the risk of fatality from measles or diarrhoea rose by one third to one half in a child whose diet was short of vitamin A. Primary health care had hijacked primary nutritional care and suggested that they were one and the same thing.

The new emphasis on the 'nutrition-infection complex' had the effect of re-emphasizing malnutrition as a condition susceptible to preventive medical approaches: in some cases by micronutrient supplements such as vitamin A or by the reduction of the young child's burden of infection. Those related to other aspects of the food and nutrition conundrum, most of which were related to poverty, were not ignored by Unicef but were downgraded and

tended to be addressed in contexts other than 'nutrition': within urban basic services or women's programmes, for example[15]. These other interventions included the reduction of women's working burden, the improvement of household incomes, the planting of fuel-wood, day-care services, appropriate technology for food conservation and processing, and the attempt to curb the inappropriate promotion and use of infant formula. In 1982, the new WHO-Unicef Joint Nutrition Support Programme (JNSP) was launched with $85 million from the Italian Government. Initiatives under this scheme fell mainly under the broad heading of PHC, but all types of nutrition-related programmes were eligible[16].

Within the GOBI strategy for Unicef's 'child survival revolution', also launched in 1982, the dual importance of nutritional support and disease control were recognized. Of the four ingredients, two—'B' for breastfeeding and 'G' for growth monitoring—were primarily about nutrition, even if by this time it was well established that nutrition was about a much broader range of issues than those encompassed by primary health care. Moreover, since impaired growth in the small child could be the outcome either of poor nutrition or of a bout of sickness, 'G' had some claim to be the linchpin of them all. Nutrition, in the form of advocating the widespread use of growth charts, was about to be given the full Unicef and Jim Grant campaigning treatment.

There was nothing novel about the concept of weight as a standard indicator of the small child's physical health and well-being. Unicef had been providing weighing scales to maternal and child health (MCH) clinics all over the developing world as a basic item of equipment for decades.

However, weighing began to take on a new dimension in the 1960s when Dr. David Morley, a leading tropical paediatrician, developed the idea of providing each child with a chart on which his or her weight-for-age could be systematically plotted month by month[17]. The chart was an aid to the health worker, for it made instantly visible a child's current growth status and showed that special care and feeding were needed long before the child became visibly malnourished. The 'monitoring' in 'growth monitoring' was, therefore, more than simple measurement: the chart was an early warning system of deteriorating child well-being. In the 1970s, Morley set up the Tropical Child Health Unit at the Institute of Child Health in London and preached the gospel of child growth monitoring far and wide[18].

In the era of primary health care—'Health by the People'—a new step was proposed. Every woman who sold or purchased food in the market was

familiar with the use of weighing scales. So why not take the equipment and the organization needed for weighing children out of the clinic and place them in the community instead? Not only would proximity mean that the monthly weighing session was much easier for mothers to attend, but the community's operation of the programme would make the faltering growth of any infant a problem for them and the mother herself, not for some distant clinician, to address. Weighing would become a community activity in which mothers took part, not just a diagnostic tool for health care or nutritional surveillance services. Mothers and the community would themselves undertake corrective action, providing extra meals for preschool children, setting up income-generating projects, and putting into practice cookery and horticultural instruction.

One of the pioneering countries to develop a model for the mass growth monitoring of children at community level was Indonesia. In 1973, a national nutrition survey was undertaken to evaluate the previous decade's activities in applied nutrition[19]. The survey exposed an extent and severity of malnutrition entirely unexpected: half the country's children under five were undernourished to some degree. Over the next few years, an intersectoral board established by President Suharto explored ways of addressing the problem. Out of their efforts grew the Village Family Improvement Programme—its Indonesian acronym was UPGK—run almost entirely by nutrition volunteers, or 'cadres'. Traditional social gatherings of neighbourhood women evolved into occasions on which they weighed their children and shared information about child care. The 'weighing post'—a room borrowed for the purpose or a shelter erected from village funds—gradually became an established community fixture.

The moving force behind the UPGK programme was the PKK, the National Women's Welfare Association, to which all the wives of civil servants right down to village level belonged. The local PKK leaders selected around 20 young women volunteers from the village to undertake a five-day training course. Each weighing post was supplied with a robust beam-balance typically used in the market, from which the child was suspended in a trouser bag or village basket. The weight would be plotted on his or her KMS or 'Towards Good Health' card. Then a trained volunteer would discuss with the mother the child's growth pattern. She would stress the need for an upward curve. Where the curve flattened or dipped, advice would be offered about appropriate feeding and protective health care. The whole emphasis of the programme was on promoting behaviour among mothers that would ensure regular weight gain for every child in every month. The mother's ability to see on the KMS when her child's growth

was faltering, and the motivation this would give her to take corrective action, were central to the programme's conceptualization[20].

Between 1979 and 1984, the programme's rate of expansion was nothing short of phenomenal. The Religious Affairs Ministry became involved, issuing injunctions to all village imams to encourage their congregations to have their children weighed; so did Indonesia's aggressive family planning movement. To growth monitoring was added contraceptive promotion and a nutritional first-aid package: iron-folate tablets to prevent maternal anaemia, high-dosage vitamin A against blindness and sachets of ORS to treat diarrhoeal dehydration. By 1984, monthly weighing and nutrition education activities had expanded to 80,000 posts located in 34,000 villages. Around 10 million children were being reached. In the same year Indonesia embraced the goal of UCI 1990. The power of village-based activities to reach such a large proportion of the population was now to be harnessed to the immunization target.

The UPGK weighing post was now upgraded into the *posyandu*, or village-based integrated service post. Here was a case in which the initial stimulation for community-based health care was provided by the desire to end child hunger and malnutrition, and other PHC actions were later added. For the first time, the Department of Health assumed responsibility for the *posyandus* and provided health workers to run them. At the same time, the programme was scheduled for a further massive expansion, to all 65,000 villages in all provinces. By 1988, 200,000 posts were serving 18 million children, over 80 per cent of the under-five child population in the country.

Although Indonesia's *posyandu* programme is regarded as a model of primary health care, its medicalization and the speed of expansion had some unfortunate consequences. In the past, the monthly sessions had been entirely run by volunteers—the ladies of the PKK and the nutrition cadres. The presence of a health worker at the *posyandu* downgraded the sense of community ownership and involvement—although it rapidly enhanced immunization progress. Children whose growth was faltering were referred to the health worker, sidelining the nutritional cadres. The *posyandu* sessions became mini-clinics conducted in the village. Nutritional advice became medical advice dispensed with tablets or even injections[21]. When this happened, the loss of the intimate chat between peers about the growth curve and what it meant reduced the KMS to a clinical measurement tool. Only if it was used properly, as a way of warning mothers where their children's well-being was headed, was its potential fully realized[22]. Sometimes the card was marked without any explanation to the mother, and the nutritional component of the *posyandu* session was no more than a ritualized talk about body-building foods.[23]

The experience of a Unicef-assisted programme in the Iringa Region of Tanzania with growth monitoring as a tool for growth promotion was much more reassuring. This programme, launched in 1982, was one of the very first to be funded by the Italian Government under the WHO-Unicef Joint Nutrition Support Programme.

Tanzania's political ideology, formulated by President Julius Nyerere in the Arusha Declaration of 1967, placed people at the centre of all development activity. The guiding philosophy of the Iringa Nutrition Programme (INP) echoed this fundamental principle, taking as its starting-point the notion that the agents of nutritional change must be the people themselves[24]. The INP assumed that rural families were unlikely to make a wholehearted commitment to any change in farming and nurturing practice unless they had first analysed their own problems and decided what action to take. The philosophy underlying the programme came straight from the 1970s era of alternatives with all its accompanying jargon: 'The nutritional status of an individual is the outcome of a complicated process embedded in the fabric of society and, therefore, sustained change in the nutritional status of a population can be brought about only by changing that process.'[25] In other words, this process—of how food was procured and what children ate—would only be lastingly changed by the people themselves on the basis of information about themselves that they found persuasive. In the villages of Iringa, growth monitoring was to become their key analytic tool.

The first year of programme implementation—1984—was the 'Year of Mobilization' in the 168 villages in the first programme area. MCH clinics were already conducting child-weighing sessions, but these did not reach more than one quarter of the villages. No discussion took place between health workers and the children's mothers about the implications of weighing for their health. So a film entitled *The Hidden Hunger* was made, explaining the nature of 'invisible' malnutrition and its causes. The film was taken around each of the villages as part of an orientation process. The revelation of hidden hunger was so persuasive that communities began to demand to see what was hidden—through growth monitoring. Volunteers were sent for training and Village Health Committees set up. A regular 'Village Health Day' was inaugurated, to be held once every three months, when children were weighed, immunizations given and other health activities undertaken. By the end of the year, around 80 per cent of all children under five out of a total of 50,000 had been enrolled. Already, levels of both severe and moderate malnutrition had begun to decline.

The centrality of growth monitoring in the Iringa programme went beyond its capacity to reveal hidden hunger and motivate action to prevent it. The

information collected from the 'Village Health Day' formed the basis of a local data-gathering system on child well-being, which itself provided a basis for programme decision-making. Village leaders and health committees gave their full cooperation, and village members—schoolteachers, health workers, party secretaries—were trained to undertake the work of enumeration and analysis. After assessing the situation and analysing the growth data, they would decide what kind of action to take. This cyclical process became known as 'Triple A': assessment, analysis, action.

Proponents of the Iringa approach emphasized from the outset that good nutrition could never be the outcome of a pre-packaged set of interventions. Instead, a variety of options should be made available from which the village health workers and programme managers could choose. These included health care campaigns, water and sanitation provision, household food security initiatives and income generation. Certain households might need extra contact with village health workers; others—especially those headed by widows—might be suffering from a shortage of food; yet others might be guilty of poor domestic management of their food stocks or poor food hygiene. What was to be done and how it should be done, with and by whom, were subjects to address and resolve at village level, drawing on external advice and resources where appropriate. On the next round of assessment and analysis, the chosen course of action could be adjusted.

In 1986 an internal review of the programme concluded that the problem of malnutrition in Iringa seemed to be primarily one of inadequate child care[26]. Because of their heavy workload and need to be away in the fields, busy farming mothers were allowing long intervals to elapse between their children's meals. The low number of feedings and the bulkiness of the diet made it impossible for children to absorb enough nutrients. Once they realized that this was pushing their youngsters off the 'road to health', the villages responded by setting up their own day-care services to look after children and feed them while their mothers were out working. Communities committed their own resources, managing to pay a stipend to 70 per cent of their day-care attendants.

This change of direction illustrated the degree to which the thrust to improve their children's well-being had been taken into community ownership. Under the combined influence of mobilization, orientation and training, local people had been empowered to take action on their own behalf. The fact that they were prepared to spend their own money on stipends for voluntary workers, food for feeding programmes, kerosene, utensils and other programme ingredients was an indication that the strategy had worked. In 1987, the Iringa

approach was extended throughout the Iringa region, and adopted for use in Unicef-supported basic services programmes in three other regions of the country. By the end of 1990, all other regions in Tanzania had begun to prepare similar programmes, and a number of external agencies besides Unicef—including the World Bank, the European Community and the Nordic bilateral agencies—had expressed their willingness to provide funds for programme replication.

In the meantime, an evaluation in 1988 showed conclusively that the impact on malnutrition in the original programme areas had been substantial[27]. Over a period of four years, severe malnutrition had dropped from 6 per cent to 2 per cent, and moderate—'hidden'—malnutrition from 50 per cent to 37 per cent. Elsewhere in Iringa the prevalence of severely malnourished children was still nearly 6 per cent. Only the programme could explain this marked difference. Over 85 per cent of mothers and children in the target area had been reached; four fifths of mothers questioned fully understood how the growth chart worked, and this understanding correlated with better growth among their children. This vindication of the Iringa approach was already having a profound impact on nutritional policy in Tanzania. It was to have a similar impact on nutritional thinking in Unicef itself.

By the mid-1980s, around 80 countries had introduced growth monitoring and growth charts as key ingredients of MCH programmes[28]. Increasingly, the chart was being used not only to record weight, but to keep track of immunizations and other aspects of the child's health progress and to convey to mothers health-promotive messages. In some areas, especially in drought-prone parts of Africa and other emergency zones, it had become a stock in trade of 'nutritional surveillance'. So widespread had growth monitoring become that the image of the child dangling in a trouser-bag from a scale tied to a roof beam or the branch of a tree had come to represent good primary health care in action.

However, the efficacy of growth monitoring as the linchpin of PHC was beginning to come under fire by child health specialists in India and elsewhere[29]. The key question concerned its impact. The time and energy expended on weighing was of questionable value if growth charts did not have the motivating power earlier attributed to them of changing mothers' child-feeding practices. Millions of mothers had become well used to the routine of weighing. However, studies showed that the capacity of illiterate women, and even of trained health workers, to understand a graph composed of a horizontal age and a vertical weight measurement, and to read and act upon the growth curve, had been overestimated[30]. A review in India complained that

growth monitoring was cumbersome and expensive—$21 million for the scales alone in India—and that there was widespread error in filling in the cards[31]. Even where weighing had been done regularly and accurately, it appeared that health workers often saw growth charts as a method of selecting out the already malnourished for clinical treatment, not for facilitating the promotion of child growth maintenance at home.

The evidence that growth monitoring had little impact on nutritional knowledge or feeding behaviour was not by any means conclusive. Unicef's 1985 *State of the World's Children* report cited a study in Ghana that indicated that 66 per cent of near-illiterate mothers could interpret charts correctly. And contrary to the evidence that women did not understand the importance of the growth chart, in one health centre in the Philippines only 1 per cent of over 2,000 regularly attending mothers forgot to bring their cards—a success attributed to the education conducted at the clinic[32]. When used in tandem with education about feeding and diet, experiences in Jamaica and Narangwal in India showed that mothers managed their children's nutritional care far better with the aid of the chart[33], and within their existing resources, as they did in Iringa. This was not an issue over which it was possible to reach a cut-and-dried judgement. The most that could be said was that growth charts were not a quick-fix 'technology'; like many other public health interventions, growth monitoring needed careful adaptation to local circumstances and much depended on how it was done.

In 1987, a Unicef workshop on nutrition policy took place in Kenya. Many topics were discussed—including the nature of nutrition programmes and how nutrition related to the GOBI package for the 'child survival revolution', as well as the impact of macroeconomic policies on child nutrition[34]. Dissatisfaction was expressed with the way in which many Unicef programmes were addressing nutrition: in some countries growth monitoring within the GOBI formula had become a surrogate for a rounded approach[35]. Some Unicef programmes went so far as to address the problem of child malnutrition merely by purchasing scales and growth charts and giving them to the Ministry of Health with the wherewithal to train health workers in their use.

In the end the Kenyan meeting made no definitive judgement on growth monitoring, although it recognized the failings with which growth monitoring had often been introduced. However, the meeting did something much more important. It paved the way for an entirely new organizational approach to nutrition. This would begin with proper analysis of the causes of malnutrition in a given environment and be less constrained by the current child survival and GOBI agenda.

The enthusiasm for GOBI technologies had led to some overstatement by its advocates of the intrinsic value of weighing children and plotting charts. Once a more sober assessment had been made, there remained some ambiguity in Unicef's approach. On the one hand, substantial sums of money have been invested—so far unsuccessfully—in developing a new electronic scale in an attempt to bring the benefits of the micro-electronics revolution to bear on the problems of poor growth. On the other, Unicef has ceased to advocate growth charts and child weighing with the unhesitating enthusiasm of the early days of GOBI advocacy. This more restrained attitude reflected the reality that mass weighing and charting of babies is no nutritional panacea. It has to be accompanied by the absorption and use by mothers of the information thus gleaned, which cannot be guaranteed without the kind of comprehensive community-based effort invested in Iringa, Tanzania.

In the early 1990s, Unicef undertook a thorough evaluation of its growth monitoring experience and found the results very mixed. On the whole, support for growth monitoring was thought warranted where people understood the activity and wanted to know their children's nutritional status. Where this was not yet the case, it was suggested that scarce resources might be better spent on helping parents to understand the causes of malnutrition and take elementary protective steps relating to diet, feeding patterns or nurture[36].

The debate about how best to undertake growth monitoring will continue, but child weighing and the growth chart are here to stay. The system of issuing mothers with such a card is also now extensively used in some industrialized countries. As a stimulus to maternal involvement in preventive child health, growth monitoring has many distinguished followers. It also has an important role to play in data collection for the purposes of nutritional surveillance of the young child population. Like any technology, its capacity to fulfil its potential depends ultimately on its use and its users—both professional and lay.

'G' was one of the key nutritional components of GOBI; 'B' for breastfeeding was the other. As with growth monitoring, Unicef's endorsement of nature's perfect infant food as part of the child survival prescription had the merit of training a spotlight on it. However, not for some years was a device found for popularizing the promotion of breastfeeding in the same way that growth charts and ORS sachets were used to popularize 'G' and 'O'.

From their earliest support to child health care in the developing world, WHO and Unicef had stressed the supreme desirability of breastfeeding for newborn health. By the late 1960s, breastfeeding had begun to show a precipi-

tous decline, especially in Latin America and parts of Asia. This was closely associated with the rapid growth of cities and the social and economic pressures of the urban lifestyle—particularly the need of many poor urban women to go out to earn. The maternal stampede towards the bottle not only attracted the attention of WHO, Unicef and concerned nutritional experts; during the 1970s, NGO activists around the world began loudly to accuse the leading infant formula companies of rating the sales promotion of their products above the well-being of infants in the developing world. For a poor mother in an urban slum, the cost of formula was prohibitive and the likelihood that her infant would receive the correct dilution with boiled water in a sterile bottle was negligible. Even if the feed was perfectly prepared, the squalor of the living environment put the child at constant risk of infection, a risk increased by the lack of health protection associated with bottlefeeding as compared with breastfeeding. The case against the infant food companies was that they were not taking the realities of bottlefeeding in these circumstances into account.

For some years, activist campaigning against food manufacturing corporations dominated the public perception of the breastfeeding debate. The companies formed their own producers' association and devised a code of marketing ethics, but this did little to abate the hue and cry against them. In 1979, WHO and Unicef held an international meeting on infant feeding in Geneva attended by representatives of governments, UN agencies and the infant food industry, as well as nutritional experts and NGO and consumer activists. The meeting adopted a wide-ranging set of recommendations on ways to promote breastfeeding, including the development of an International Code of Marketing of Breastmilk Substitutes. Such a Code was passed by the World Health Assembly in 1981.

Among the Code's provisions was a ban on all advertising and distribution of free supplies of breastmilk substitutes to health centres and hospitals. Except where used for medically approved purposes in the hands of health personnel, infant formula would no longer have a place in maternity wards and no company employees in nursing uniform would be permitted to darken their doors. At the same time, governments should actively promote sound infant feeding. The Code provided a policy check-list for countries trying to halt the growing ascendancy of bottle over breast. A government that tried sincerely to put it into effect would have to undertake legislation and commit itself to the promotion of breastfeeding as a public policy.

One of the first countries to adopt the Code was Brazil. Between 1940 and 1974, breastfeeding in the first month of life had declined from 96 per cent of mothers to 39 per cent, the results of which were showing up in malnutrition

wards in many urban hospitals as well as in infant mortality statistics. A study in Recife showed that over half the deaths among infants aged between one and five months occurred among those who had been weaned before one month of age[37].

The Brazilian Ministry of Health believed that certain aspects of breastfeeding's decline were susceptible to programme intervention. These included the widespread ignorance about breastfeeding, its neglect in medical and nursing training and the lack of nursing facilities for working mothers. In 1981, a programme primarily inspired by the WHO/Unicef Geneva meeting of 1979, and keenly supported by Unicef, was launched. Its purpose was to reinstate exclusive breastfeeding in the first four to six months of life as the optimal route to infant health.

The campaign took a leaf out of the formula manufacturers' book by deploying the latest in modern marketing techniques[38]. The use of advertising and mass media to support a social programme in this way—particularly one featuring an intimate part of the human body—was relatively uncharted territory. Careful research went into developing its messages. Findings showed that low-income urban mothers often abandoned breastfeeding out of a sense of personal inadequacy. So what a mother needed was not an admonition to breastfeed, but reassurance. She had to be encouraged to believe: 'You *can* breastfeed.'

In March 1981 the programme was launched with a national campaign on television, on the radio and in the press using space and air time paid for by the Government. The messages—in spots, films, women's shows, variety acts, soap operas—were carried by nearly 100 TV stations reaching 13.5 million households and by 600 radio stations. Messages carried on lottery tickets, electricity bills and bank statements all over the country helped to sensitize the public. Following the launch, some 30,000 health workers were exposed to breastfeeding training. For six subsequent months in three high-priority cities, free air time was provided by TV Globo, Brazil's leading broadcasting network. The involvement of the media moguls of the private sector in this campaign set a precedent that has been greatly to the benefit of subsequent child survival activities in Brazil.

By 1983 a Brazilian version of the Marketing Code for Breastmilk Substitutes had passed into law, the medical profession had lost its previous indifference as to whether a mother breastfed her infant or not and the cultural environment had ceased to be formula-permissive. These positive signs notwithstanding, the results of the campaign were not as decisive as its enthusiasts had wished. There were local increases in both prevalence and duration of

breastfeeding in the big cities. But the underlying social and economic trends that were prompting its decline—rapid urbanization, changes in family structure, industrialization, female employment—were all pulling in the wrong direction.

However, the Brazilian programme was very important internationally in pioneering social marketing techniques and illustrating that an extensive range of actions could be taken to dispel ignorance about breastfeeding and to motivate mothers. By 1988, over 130 countries had taken some action—albeit often not very effective action—to control the marketing of infant formula; a few had passed the Code into law[39]. But there was little sign that the war against the bottle was being won. Gradually, the battleground began to shift away from the advertising hoardings into maternity and infant wards.

In many parts of the developing world it was no longer the case that the majority of births were taking place at home, outside formal health care institutions. In Latin America and much of Asia, and even in some parts of Africa, the majority of urban women were now choosing to give birth in a modern medicalized setting[40]. In most maternity hospitals, routine practices surrounding birthing and post-partum care imitated their counterparts in the West. Most of these practices were designed to make life easier for the nursing staff rather than the nursing mother. Some—such as the separation of mother and infant immediately after delivery—actually interfered with the successful initiation of lactation and breastfeeding. Others, such as the routine provision of bottles for supplementary feeds, endorsed and opened up the formula route. By the time a mother discovered the costs and hazards of hygienic bottle-feeding, she was irredeemably hooked.

A pioneer in modifying the hospital environment was Dr. Natividad Relucio-Clavano of Baguio General Hospital in the Philippines[41]. Until she took charge, Baguio's maternity facility had been run along the lines of a Western teaching hospital. Newborn babies were taken from their mothers at birth, kept in the nursery and routinely given bottle feeds. Under Dr. Clavano's regime, nursing began in the delivery room, babies 'roomed-in' around the clock with their mothers and artificial feeds were banished. Within two years the newborn mortality rate dropped by 95 per cent and infant infection in the nursery by 88 per cent. Dr. Clavano's success with 'baby-friendly' maternity care became widely known among international child health specialists during the 1980s.

In July 1990, a new meeting on the promotion of breastfeeding was convened by WHO and Unicef (with USAID and SIDA) at the International Child Development Centre (ICDC) in Florence, Italy. During the previous decade, new scientific interest in breastfeeding had prompted a flurry of re-

search into all its aspects, including its immunizing and fertility regulation capacities. WHO now maintained that a bottle-fed baby in a poor community was 15 times more likely to die from diarrhoeal disease and 4 times more likely to die from pneumonia than an exclusively breastfed baby[42]. Although the benefits of breastfeeding became every day more apparent, bottlefeeding was not yet seriously relaxing its hold, and a new effort was needed.

The ICDC meeting issued the 'Innocenti Declaration'[43]. This called for the creation of an environment 'enabling all women to practice exclusive breastfeeding, and all infants to feed exclusively on breastmilk from birth to four to six months of age'. From this point onward, the breastfeeding lobby began to gain a new lease of life. In 1991, a new international NGO consortium was formed: the World Alliance for Breastfeeding Action (WABA)[44]. A few months later the International Association of Infant Food Manufacturers was persuaded to stop the distribution by its 29 members of free and low-cost breastmilk substitutes to hospitals and maternity centres throughout the developing world by the end of 1992. Although this goal was not entirely achieved, and violations of the Code of Marketing of Breastmilk Substitutes continued to be reported in 1994, the process of tightening up on infant formula marketing gained new momentum from this time onward[45].

In association with this development, the idea also emerged of a campaign directed at hospitals to encourage them to become 'baby-friendly'—a term coined by Unicef's Jim Grant. Special recognition would be given to hospitals that followed joint guidelines on maternity practice developed by WHO and Unicef and popularized as the 'Ten Steps to Successful Breastfeeding'. This amounted to a second 'Code' relating to breastfeeding. It required that every maternity facility have a written breastfeeding policy in which all health staff were trained. Everything possible should be done to inform mothers of the advantage of breast over bottle and to help them to establish and maintain lactation. Babies must not be separated from their mothers after birth, and newborn infants must receive no food other than breastmilk unless medically indicated. Rooming-in should be the rule, as should breastfeeding on demand, and hospitals should foster breastfeeding support groups and refer mothers to them upon discharge.

During 1991, the anniversary year of the passage of the original Code, the ground was prepared for the launching of the Baby-Friendly Hospital Initiative (BFHI). This was also the year following the World Summit for Children, whose Declaration had included a provision supporting breastfeeding. As a part of Summit follow-up activities, 12 countries distributed between Africa, Asia and Latin America—including both Brazil and the Philippines—were

approached by Unicef and agreed to take the baby-friendly lead[46]. All received intensive support during the next few months to ensure that, by February 1992, a number of hospitals would put the 'Ten Steps' into effect and could be classified 'baby-friendly' by an independent expert panel. Unicef paid for health staff training in lactation management and helped persuade infant food manufacturers operating in the countries concerned to stem the flow of free supplies into hospitals and clinics.

One of the countries to take up the baby-friendly gauntlet was Mexico. A national health survey carried out in 1988 had found that 81 per cent of mothers started out breastfeeding, but that three months after the birth of their children only 10 per cent were feeding by the breast alone. In May 1991, a National Commission for the Promotion of Breastfeeding was created by the Minister of Health. The following month, during a meeting called by President Salinas to evaluate Mexico's progress in achieving the World Summit for Children goals, Jim Grant proposed that Mexico now develop a baby-friendly initiative[47].

With the support of Unicef, the Ministry of Health set up a working group whose first decision was to broaden the concept to include mother-friendly actions as well. To the 'Ten Steps' another 15 were added, focusing on maternal and child health in general. Thus was launched '*hospitales amigos del niño y de la madre*'—hospitals that were friendly not only to babies, but to mothers, communities and society as a whole. The commitment of the Mexican Maternal and Child Health teams at national level was wholehearted. The programme moved into action in September 1991 and went ahead rapidly. By the end of the year, 46 hospitals had enrolled and several had been designated *amigos* in time for the global launch of the BFHI, which took place in March 1992 in Washington, DC.

From the start the Mexican Ministry of Health wanted all hospitals to join the Initiative, not merely those under its own supervision. It therefore set up a mechanism to coordinate the actions of all nine Mexican institutions that administer hospitals. The Ministry also wanted the Initiative to be countrywide, so one hospital in the capital city of each of Mexico's 31 states was selected to become a *hospital amigo*. By September 1992, 214 hospitals and maternity centres out of a total of 700 in the country had joined in. In addition, the 'Twenty-five Steps' had been widely disseminated throughout the primary health care network: in Mexico, hospitals and maternity wards were only the initial target of the campaign.

In Zacatecas, the capital of one of the northern states, all public hospitals have been certified mother- and baby-friendly. The hospital run by the IMSS,

the Mexican Institute of Social Security, was certified *amigo* in December 1993. In its maternity unit, visual reminders constantly endorse breastfeeding: posters, red no-entry signs for bottles and teats, a video in the waiting-room. Mothers recovering from childbirth recount without embarrassment the means by which they established lactation and proudly show off their skill. Local medical directors state that the hardest challenge was to bring hospital staff fully on board. The 'culture of the *biberón*' was so well established in professional mentality that there was initially a lot of resistance. Now that attitudes have changed, hospitals are running outreach programmes to extend success through the rural health care network.

By the end of 1994, some 748 hospitals and maternity centres were participating in the Mexican BFHI Initiative and 224 had received their *amigo* plaque. By this time, the number of countries to have joined the Initiative had risen to 171, and the number of hospitals to have received a baby-friendly plaque to over 3,000[48]. Some 10,000 maternity facilities had made a public commitment to achieve baby-friendly status by the end of 1995. These included 230 hospitals in industrialized countries, for the BFHI goals apply equally in rich as well as poor countries. Although the last two decades have seen a wider appreciation worldwide of the properties of breastmilk as a perfect infant food, a very large number of hospitals in Europe and North America as well as in the less industrialized regions have still to accord lactation and its management the priority they deserve.

If the technological fix as a method of solving the mythical 'protein gap' became discredited in the 1970s, it gained credibility during the 1980s and 1990s to address a different set of age-old nutritional problems: micronutrient deficiencies. The main dietary culprits of a range of debilitating and disabling conditions threatening up to one third of the world's population were a vitamin and two minerals: vitamin A, iron and iodine.

Of the 'big three' micronutrient deficiencies, lack of iron—responsible for around half the world's 1.5 billion cases of anaemia—was the most prevalent[49]. Of these cases, 50 per cent occurred in pregnant women and preschool children. Not only did the condition induce tiredness and lassitude, making it harder to fulfil the daily work burden and to be alert, but anaemia in an expectant mother was a principal cause of low-birth-weight babies, of which 23 million were born annually. In the mother, severe anaemia was thought to be responsible for 20 per cent of deaths in childbirth and pregnancy. In the infant and child, iron deficiency weakened the body and reduced cognitive

development. The simplest remedy for most of this unnecessary death and impairment was the distribution of iron-folate tablets to mothers as a stock ingredient of basic antenatal care. This was an important strand of the WHO-led 'Safe Motherhood' initiative, launched in the late 1980s[50].

Shortage of vitamin A has long been associated with an eye affliction—xerophthalmia—which affects around 14 million children under the age of five[51] and causes blindness in around 250,000 every year[52]. Although in the postwar period, the distribution of cod-liver oil—rich in vitamin A—had been widely promoted to protect the young child's health, the full significance of vitamin A deficiency in the small and growing body were not appreciated until the early 1980s. It transpired that even relatively mild deficiency in vitamin A impaired a child's immune system, increasing vulnerability to sickness and death. This was revealed almost haphazardly during the analysis of data from a large-scale study in Indonesia in 1982[53]. Evidence suggested that the prevention of vitamin A deficiency would not only reduce blindness from xerophthalmia, but could reduce the overall death rate among young children by between one fifth and one third. This discovery, when reported in the professional medical journals, was greeted with disbelief. It seemed too good to be true that up to 3 million children's lives could be saved every year by something so cheap and simple as a course of vitamin A tablets costing only a few cents. But further studies bore out the finding: deaths among Tanzanian children hospitalized with measles fell by half when vitamin A capsules were administered[54].

For many years, nutrition educators had been encouraging mothers to feed their children items rich in vitamin A, especially carrots and green leafy vegetables. Not only was this a slow and uncertain remedy, especially for children in families deeply stressed by poverty, but nutritional scientists also began to question whether it was possible to make up sufficient lost ground by this method[55]. In the industrialized world, the problem was partially solved by the fortification of common foods, such as margarine, with vitamin A. In Guatemala, one of the earliest countries in the developing world to attempt a similar strategy, sugar has now been similarly fortified. Unlike the fanciful experiments with protein-rich foodstuffs in the 1960s in which the food industry was unwilling to invest, there seems a very good prospect that their cooperation in eradicating vitamin A deficiency can be successfully solicited. One company in the Philippines has recently increased by 10 times the vitamin A content of its low-cost margarine, and another major multinational is considering the same step in a number of African countries[56].

The third major micronutrient deficiency was lack of iodine. Around 1.5 billion people lived in areas where their dietary intake of iodine was inad-

equate, according to WHO[57]. As a result, between 200 and 300 million people suffered from goitre: an enlargement of the thyroid gland which caused an ugly swelling in the neck[58]. Worldwide, iodine deficiency caused mental retardation in 20 million people, of whom 6 million suffered the acute mental disability of cretinism[59]. A child born to a mother with goitre had a considerable chance of suffering from physical or mental disability, including speech and hearing defects. Grouped together, these conditions were known as iodine deficiency disorders (IDD).

A cheap and effective solution to IDD lay ready to hand: another food fortification 'fix', this time of table salt with iodine. Salt is an item of diet purchased even by the poorest family. The iodization process was relatively cheap and so—theoretically—a kilo of iodized salt should cost only a few extra cents. If countries' entire salt supplies could be 'spiked', the world's leading cause of mental retardation could be removed at a stroke. However, this was not as straightforward as it sounded. Many of the areas whose people suffered from iodine deficiency were mountainous or flood prone: the iodine supply had leached from the soil over generations. These areas, almost by definition, also tended to be remote. Their inhabitants did not buy their salt from the kind of retail outlet supplied by food marketing and distribution systems. Nor were their health problems of heartfelt concern to city-dwelling leadership elites.

When Unicef began to support IDD control in the 1960s, the full ramifications of these problems were not widely understood. This was the heyday of high-tech nutritional fixes via food processing, and salt iodization plants were provided to several countries in Asia and Latin America[60]. These efforts were mostly ineffective in putting paid to IDD. Salt manufacture was a cottage industry employing thousands of people in countries such as India and Indonesia. A farmer tended a salt 'mine' (a shallow pond dug out when the water evaporated) by the edge of the sea or a salt-water lake; this salt harvesting was often undertaken in the same way that a pasture-dwelling counterpart would tend a few sheep as a sideline. Salt raked up and sold in sacks by small producers was outside the reach of government control and far from any processing technology. Even in the early 1990s, with salt harvesting as a cottage industry everywhere declining and the quantities produced occupying a relatively small place in the market, over 70 per cent of all salt producers in the IDD-vulnerable parts of the world were classified as 'small'. Not all could be made to iodize salt, nor would it be just or desirable to force them all out of business[61].

In the early 1980s, Bolivia was a textbook example of a country with very serious IDD that simultaneously enjoyed all the topographical, social and salt-

manufacturing problems that typically confront IDD control. One of the poorest countries in South America, all of its territory—from the high Altiplano to the sparsely populated Amazonian jungle—had soil deficient in iodine. The majority of the population lived in rural areas where there were few roads and no regular transportation. The most inaccessible mountain-top communities were the very ones hardest hit by IDD.

Reports of an unusually high incidence of goitre and cretinism in Bolivia dated from colonial times[62]. In the 1960s, the Ministry of Health had taken a few tentative steps to address what had previously been regarded as an insignificant natural phenomenon. Various laws were passed declaring that all salt should contain iodine and that everyone should consume iodized salt; but efforts to enforce these laws—or to create the circumstances in which they could be enforced—were desultory. In 1983, the Ministry of Health created a new entity in the National Office of Food and Nutrition to revive the fight against IDD: PRONALCOBO. The country's difficult terrain, underdeveloped infrastructure and a history of poorly planned programmes all had to be confronted. PRONALCOBO was strongly supported by WHO and Unicef and funded by the Italian Government under the Joint Nutrition Support Programme.

One of the programme's immediate actions was to distribute iodine capsules to 2 million people in the most affected areas. This short-term measure of protection against goitre would last for up to three years, so it was seen as a temporary measure to be superseded by salt iodization. But in 1983, there were only two salt iodization plants in Bolivia, and the salt they produced met less than 10 per cent of national consumption. Its price was high; at $.75 per kilo it cost five times more than common salt. The rest of the salt industry in Bolivia was extremely dispersed since there were salt deposits in all parts of the country, and manufacture was mostly conducted by *campesinos* using traditional evaporation techniques.

PRONALCOBO's first priority was to increase the production of iodized salt and reduce its price, without forcing the *campesino* producers out of business. As it was impracticable to iodize the salt of every individual *campesino*, PRONALCOBO encouraged them to form cooperatives. This was not easy: members had to learn how to run their enlarged businesses. Yet some not only became viable, but managed to introduce a number of improvements: piped-water supplies and preschools. Their range of products also expanded, with PRONALCOBO's help, to include iodized block salt—salt in its traditional unpackaged variety. Towards larger salt manufacturers PRONALCOBO took a different approach, offering loans and subsidies to underpin the economics of iodization. By the end of 1986, 14 iodization plants were producing enough

salt to cover nearly half the estimated human consumption in the country. After this, the participation of private industry grew rapidly.

Production, however, was only one side of the picture. As important was the need to smooth the path of cheap iodized salt into the commercial market. As a result of two marketing studies, PRONALCOBO decided to take its most radical step: it would itself enter the salt marketing business directly, in order to exert a stabilizing influence on prices and to bring the new salt to those who purchased their supplies in remote *campesino* markets. So a National Salt Commercialization Company (EMOCOSOL) was set up as a private limited corporation within the Ministry of Health, with participation from both WHO and Unicef. This marriage between 'social' and 'commercial' objectives was surprisingly effective.

EMOCOSOL set out to work closely with the salt cooperatives, providing them with technical support and guaranteeing the sale of their salt on the market. It also purchased—sometimes confiscated—quantities of common salt and iodized it at its own manufacturing plant in La Paz. In rural areas where the normal system of *campesino* trade was by barter, EMOCOSOL accepted goods and resold them in payment for salt. It set up its stalls at religious and cultural festivals, and developed sales strategies for different segments of the consumer market. In the process, it became the largest salt marketing company in Bolivia. It was able to set quality standards, and intervene to push prices up or down to ensure the salt market's smooth transition into 'iodized only' for all human and livestock consumption.

The impact of PRONALCOBO's operations was dramatic. A 1989 survey showed that the prevalence of goitre among schoolchildren had dropped from 65 per cent in 1983 to around 20 per cent, and that the incidence of new cases of cretinism was near zero[63]. By early 1994 the production of iodized salt was sufficient to cover 90 per cent of human consumption in the country, at prices nearly equal to those of common salt. All elements of subsidy previously provided via Unicef had ceased. The market had become 'pure' and self-sustaining. Only the most remote bastions of iodine deficiency in the high Bolivian mountains had yet to tumble.

In 1986, the international drive to bring IDD under control entered a new phase: the International Council for Control of Iodine Deficiency Disorders (ICCIDD) was established. Its purpose was to develop a network of expertise to support the growing number of national IDD control programmes and undertake other international activities to bring IDD to an early end. In 1989, Unicef approved a major programme of support to the ICCIDD. A number of other international programmes and bodies now entered the IDD fray, including the

Centers for Disease Control in Atlanta and the Task Force for Child Survival. Political leaders also were beginning to attach themselves to the IDD cause: the profound implications of iodine deficiency for the national IQ were found to be remarkably persuasive. A much bigger IDD ball was finally rolling.

The World Summit for Children in September 1990 set three goals for the reduction of micronutrient deficiency by the year 2000. These were the virtual elimination of IDD; the virtual elimination of vitamin A deficiency and its consequences, including blindness; and the reduction by one third of the 1990 levels of iron deficiency anaemia in women. Almost exactly 12 months later, an international conference was held in Montreal, Canada, entitled 'Ending Hidden Hunger'. Convened by WHO and Unicef, and co-sponsored with CIDA, USAID, FAO, UNDP and the World Bank, the conference attracted 300 senior officials and technical specialists from 50 countries[64]. Out of it came a new 'Micronutrient Initiative' and the establishment of a new international body to tackle micronutrient malnutrition, based at the International Development Research Council (IDRC) in Ottawa and supported by CIDA, UNDP, IDRC and Unicef[65].

Just a few days before, Jim Grant and WHO Director-General Hiroshi Nakajima had certified the achievement of 80 per cent immunization coverage of children worldwide. The triumph of UCI 1990 was fresh in many minds. The degree of energy and political will now accumulating behind the micronutrient bandwagon was considerable. In 1993, a mid-decade goal associated with IDD was set: not elimination of the disorders but universal salt iodization—USI. So popular was this goal that it soon began to seem like the UCI of the 1990s.

In 1990, as a result of the process originally triggered at the nutrition workshop convened in Kenya in 1987, the Unicef Executive Board was invited to endorse a new Unicef nutrition strategy[66]. Between 1975 and 1990, the prevalence of protein-energy malnutrition among children in the developing world had dropped in every region except sub-Saharan Africa. But the hungry and malnourished child was far from being relegated to the pages of history. Around 190 million children worldwide aged less than five were underweight and 20 million suffered from severe protein-energy malnutrition[67]. Child malnutrition, therefore, remained a problem of huge dimensions, and some rethinking and re-energizing on this front were felt to be due.

For some years Jim Grant had been hoping for a low-cost technological breakthrough in the nutrition field—something equivalent to ORS in public

health, based on improved crop strains and simpler cultivation. This would enable the attack on malnutrition to be mounted from an agricultural, as well as a disease reduction, direction and the latest scientific research breakthroughs to be put to popular use. Grant himself had been closely involved with the introduction of Green Revolution technology into Turkey in the 1960s and was very aware of what such advances could bring[68]. In pursuit of this goal, Unicef embarked in the late 1980s on a collaboration with the International Institute of Tropical Agriculture in Ibadan, Nigeria, to disseminate in various African countries a better-yielding, quicker-growing and more resistant strain of cassava.

But this venture was controversial within Unicef. Its social goal—better child nutrition, improved household food security, increased incomes for women cassava farmers and processors—was never clearly established[69]. And its starting point—an increased yield of one of Africa's least nutritious staples—attracted some derision. Unicef's senior nutrition adviser—Urban Jonsson—was currently engaged in an effort to re-establish the problem of malnutrition as one of great complexity, not as a subset of agriculture and public health that could be remedied by the equivalent of GOBI-type interventions associated with the plant and animal kingdom. Coming from Tanzania where he had been Unicef's country representative during the experiments with nutritional improvement in Iringa, Jonsson was determined to re-establish the view that people's food intake had to be examined from a layered perspective that included the distribution of power and resources both within society and within the household, between haves and have-nots, males and females, young and old.

This was the central theme of the new strategy for nutrition submitted to the Unicef Executive Board in 1990. The policy paper traced the history of the 'nutrition problem' and the consecutive preoccupations of its protagonists—from vitamin deficiencies, to protein deficiency, to multisectoral nutrition planning, to the 'nutrition-infection complex' within the 1978 doctrine of primary health care[70]. It suggested that the location of nutrition within the PHC hearth had produced a number of successful 'nutrition-oriented' programmes—many of which had been supported under the Italian-funded WHO/Unicef Joint Nutrition Support Programme; but it also asserted the need to remove nutrition from under the shadow of the health sector in which it had become somewhat marginalized. The reason for the success of these 'nutrition-oriented' programmes was attributed to non-health service factors: to their emphasis on the community, on monitoring nutritional status at community level, on enabling the community to decide what to do, on providing services wanted and appreciated by the community[71]. Although unacknowledged, the

thinking in the paper was strongly influenced by the experience of the JNSP-supported programme in Iringa, Tanzania. The conceptual framework developed at Iringa for analysing the causes of malnutrition in the community, and the Triple A approach as the way to resolve it—assessment, analysis, action, to be undertaken in and by the community—were presented as the centrepiece of the new strategy.

Although care was taken to give due respect to disease control as a means of reducing malnutrition and associated child deaths, the strategy was in other ways the antithesis of GOBI-style prescriptions. Its philosophical thrust was a specific rejection of pre-ordained packages of technical interventions. Instead, it proposed that households, communities and officials at district and national levels be taught how to assess and analyse the problem of malnutrition in their midst, and thereby identify the most appropriate actions to undertake. In this scenario, the *context* in which action to improve nutrition would be taken was all-important. By implication, improvement in the whole quality of family life—including the reduction of poverty, or 'development'—was not something that could be done to people or for them or merely with their duly mobilized cooperation; it had to be done via their empowerment. Unless they were central to its achievement, development was not sustainable.

The conceptual framework at the heart of the new nutrition strategy, independently of its utility in the practical task of programme development, served an important function. It synchronized all past and present strands of nutritional thinking and described their relationships to one another. It did this by disaggregating the causes of malnutrition into three tiers: 'immediate', 'underlying' and 'basic'. Immediate causes were illness and inadequate food; underlying causes included family and food supply circumstances, and the presence or absence of services such as health care and environmental sanitation; basic causes were the structural and societal causes, such as pricing policies, agricultural investment policies and trends that marginalized the poor, the landless, the female and other disadvantaged groups. While basic causes would need to be tackled at the national and political levels, there was a great deal that communities—with the right kind of facilitating inputs—could do about the immediate and underlying causes of malnutrition.

Underlying causes were grouped into three main clusters: the absence of services that would permit the control of infection in children; shortage of food in the household; and insufficient care. At one step removed from the actual manifestations in the body, therefore, the dyad of infection and lack of dietary energy was transformed into a trinity of causal agents for childhood malnutrition, including care prominently for the first time. In this context,

care meant exclusive breastfeeding in the early months of life, regular and frequent feeding, knowledge and facilities to prepare suitable food, washing and keeping the child's environment clean, as well as time spent with the child on play and other forms of stimulation and cognitive learning.

This was the first time for some years that a major Unicef policy had been couched in terms of 'people's participation' and 'bottom-up' approaches popularized during the 1970s. The language of 'participation' and, more recently, of 'women's empowerment' had been co-opted by the exponents of the 'child survival revolution'; but its use was synthetic, as in the 'empowerment of women to breastfeed'[72]. The nutrition paper was much more radical in intent; it expected decision-making power to be vested in the community. It even took as its starting-point the notion that freedom from hunger was a basic human right and cited the newly passed Convention on the Rights of the Child—the first Unicef programme policy to do so. Despite its rejection of universalist and prescriptive approaches, it set out nutritional goals for the 1990s: measurable reductions in protein-calorie malnutrition and micronutrient deficiencies. It proposed that the ways in which goals and targets should be reached would require local adaptation and local participation in the planning process.

Because it was so unconventional by the current standards of Unicef policy statements, this document was a landmark. Its emphasis on situation analysis based on community self-assessment as the springboard for action, and on the need for constant measurement and reappraisal, was an attribute of the programming process with far wider implications than for nutrition interventions alone.

Within a few months of the Board's agreement to the policy, the World Summit for Children had taken place. The acceptance by world leaders of a set of goals for children and development in the 1990s, which included targets not only for reductions in protein-energy malnutrition and micronutrient deficiency but for many other areas involving 'food, health and care', was to be the dominant influence on the Unicef policy agenda for the next several years. The need to reconcile what appeared to be opposite approaches—a goals-led strategy established at the international level and a strategy driven by community assessment, analysis and empowerment—was therefore first identified within the context of nutrition policy. Whether or not there was an inherent tension that needed to be resolved, nutrition-related activities advanced on a variety of fronts in the pragmatic style typical of Unicef. Undoubtedly, the policy paper of 1990 had given the issue of child hunger and malnutrition a higher profile than it had enjoyed for a considerable time. However, the proportion of Unicef resources allocated to nutrition remained constant over the next few years, at just over 30 per cent[73].

During 1991, preparations began for an International Conference on Nutrition (ICN) to be organized by FAO and WHO in Rome in December 1992. This was to be the most important international gathering to discuss nutrition since the World Food Conference in 1974. To its understandable chagrin, Unicef was not invited to be a full sponsoring partner[74]. Nor—initially—were positions already established in the UN Subcommittee on Nutrition, in which Unicef played a significant part, taken fully into account.

However, after some negotiation, Unicef did become involved in the preparatory activity for the ICN at country and regional levels. Its key concern was to ensure that what happened in the lead-up to, and as an outcome of, the Conference did not set governments off along some other track than that already agreed at the World Summit for Children. The Declaration emanating from that meeting had led to the development of follow-up national programmes of action in 135 countries in just over two years[75]. The goals already agreed upon—for reduction of malnutrition and of low-birth-weight babies, for universal iodization of salt and control of IDD, for support to breastfeeding and for the spread of baby-friendly hospitals—had to be echoed by the Conference if future confusion about nutrition-oriented support provided to governments was to be avoided. Unicef's insistence that there should be unanimity within the international community on nutritional policy and targets was ultimately rewarded by the inclusion in the Conference's World Declaration on Nutrition of a commitment to the previously agreed-upon goals.

Addressing the Conference, Jim Grant represented the articulation of the nutrition goals for the 1990s as a moment of historical convergence between what morality had long demanded and what science with its empirical knowledge was now able to deliver. There was no longer any justifiable reason why 200 million children around the world went to bed hungry at night or suffered physical or mental deformity because their dietary needs could not be met[76]. 'What can be done,' Grant asked, 'to ensure the nutritional security to which each and every child has a right? Unicef's experience tells us that lasting solutions require the mobilization of the very fabric of societies in pursuit of shared goals, and the empowerment of the disenfranchised to change and improve their own lives.' In Grant's conception, 'bottom-up' advance was not an alternative to 'top-down' advocacy and policy development. There was no inconsistency between setting national and international goals and targets, and at the same time working to empower the partners in a process whose ultimate aim was human development and social justice. From this point onward, the elimination of childhood hunger and malnutrition was to be projected by Unicef as a fundamental issue of human rights.

Over the past few decades, the perspectives from which the problem of the persistently hungry and malnourished child had been addressed had grown and multiplied. Some themes remained constant: the need for effective programmes of relief feeding for child victims of war, famine and disaster and for the nutritional rehabilitation of cases of extreme debility and starvation. Other themes changed as a result of new nutritional and scientific knowledge: the focus on certain nutrients—conspicuously protein—had given way to a broader focus on energy, and had then again embraced specific nutrients, particularly micronutrients such as iodine and vitamin A. Advances in nutrition-oriented agricultural science had shifted from concern with food quantity to quality, from conservation to production, from leaves, to pulses, to animal products. Breakthroughs in biotechnology and the food-processing industry had been first greeted with overenthusiasm, then reassessed and later brought back into the picture with a new emphasis on community involvement. Yet other themes had ebbed and flowed on the nutritional agenda: direct and indirect links with public health and the control of infectious diseases; the interactions between nutritional well-being and the general state of political, environmental and economic affairs.

Interwoven with all these changing perspectives was the story of changing livelihoods and lifestyles in the industrializing or 'developing' setting; the story of breastfeeding's decline and efforts to arrest it; and increased awareness of the need for care and of the impact on children's nutritional status of gender discrimination. A great deal of progress had been made in the resolution of how to help the hungry child—the quintessential problem of poverty and human development. But of all the human and child development goals set for the millennium, a major reduction in protein-energy malnutrition will be the hardest to accomplish. On the other hand, if it is accomplished, this will indicate that much more has happened in terms of poverty eradication and improvements in the quality of life than the achievement of any other single goal would imply. In the closing years of the 20th century, the many intricacies of the child hunger and malnutrition complex are finally being unravelled.