

Understanding livelihoods on the edge: a journey

Sub-title: A brief history of Household Economy Analysis

(References are by number in brackets and are given at the end of the paper)

Introduction

The practice of humanitarian assistance has long struggled to proceed on the basis of coherent evidence. In the beginning, the charitable intention was seen as sufficient, but over the years there have been increased calls for accountability and for alignment with principles of proportionality and appropriateness, so that those who receive aid are the ones who need it most and the right kind of assistance is given at the right time and for the right period. To this end Household Economy Analysis (HEA) has been an important and increasingly applied tool over the past 20 years, and indeed it is difficult to think of any equivalent decision-oriented analytical framework that has been applied in so consistent a manner for such a period of time. For this reason, and because its development has gone alongside fundamental improvements to our understanding of food security and livelihoods, the history of HEA is a story worth telling.

Household Economy Analysis (HEA) emerged as a practical methodology in the mid-1990s, and especially in the decade up to 2014 it became well-established in the sphere of food security assessment and famine early warning. It is based on a holistic analysis of livelihoods, in particular offering a quantified and integrated view of the economic operation of households at different levels of wealth in a given locality or geographical zone, detailing especially their food and other production, their basic food consumption, their income in cash and kind, and their cash expenditure. This allows comparisons to be made both between wealth groups and between different geographical areas.

HEA has been a central feature of projects or programmes funded by USAID, ECHO (European Union Humanitarian Aid), DFID and FAO, and HEA surveys have been commissioned by WFP, UNHCR and a dozen international NGOs, three of which (Save the Children, OXFAM and ACF) have had their own trained, permanent staff to run HEA-related work. Finally, HEA has increasingly become part of, or indeed the basis of, several government early warning systems in Africa. The application of the HEA methodology expanded so rapidly over the last decade that even for those most involved professionally it came as a surprise to be told that as of the end of 2013, as many as 360 HEA baseline field studies had been carried out internationally, mainly in rural areas but also in urban contexts and in refugee camps. And these and other HEA-based work had been carried in some 40 countries, 25 of them in sub-Saharan Africa, the remainder in countries from Central and South America to the Balkans, the Near and Middle East, Central Asia, South Asia and South-East Asia.

Although today HEA involves the use of digitized spreadsheets to store and manipulate over 600 variables, the basic methodology is quite transparent and mathematically simple (as is the reporting) and essentially no different from the 'back-of-the envelope' calculations of rather fewer variables made in the course of fieldwork in the early development of the approach. Indeed the fieldwork itself still requires the interviewers to make quick, on-the-spot calculations of answers in order to see if they add up to something sensible and to

enhance further questioning. Given this tight and integrated framework for assessing food security and livelihoods, it might be thought that there has been a teleological progression, as if it had from the start been conceived to become what it now is. And it is true that from the start - and arguably therefore over several decades - the development of the approach has been remarkably consistently guided by central questions regarding household access to food, and by extension to cash, and at root the quest to simply make sense of poor people's economic circumstances and decisions. On the other hand, an analytical system such as HEA could hardly have been imagined in the early 1970s when the term 'food security' itself was hardly defined. And as in any sphere of human activity, the development of HEA has also been promoted, or occasionally delayed, by the accident of unforeseen events and by the presence of certain personalities in certain positions as well as by the particular agendas of institutions.

In this account we do not deal directly in personalities, and we do not enter into the detail of institutional matters. But it should be stated up-front that in these terms Save The Children UK provided, most especially in the 1980s and early 1990s, a quite remarkable, if not unique, nurturing environment that was critical to the development of what became HEA. There was a consistent interest in and proactive support for what might, after all, have been seen as a technical approach best left to academic specialists – and support meant encouragement at a high level, trust expressed in the lee-way allowed by the management, and significant, discretionary expenditure of 'unrestricted' money on which, of course, there were plenty of alternative calls. It would be difficult to decide precisely how far HEA was the result of purposive, step-by-step development and how far the result of events and associated pressures and opportunities. And HEA development has for some fifteen years been taken forward also by other groups and agencies, including a number of people who have devoted their professional lives to it. But insofar as HEA is a valuable contribution to our capacity to analyse and understand food and livelihood security, and the poverty that is their context, there may be a message for other institutions in that early nurturing and risk-taking environment that is the ground upon which the following history is founded.

Early signals

It is possible to place the start to creating the HEA approach-proper in 1993/4, when FAO asked SCUUK to help with a major gap in early warning methodology. But arrival at that moment came after a twenty-year journey for SCUUK, and it is worth recording the outlines of that history first. The story starts, then, in 1973 when the human cost of a catastrophic two-year drought right across the far-northern latitudes of sub-Saharan Africa became evident, with international reportage first from the Sahel and then from Ethiopia. In July, SCUUK decided to venture for the first-ever time into the Sahel to mount a rapid nutrition survey in northern Burkina Faso (then Upper Volta) with a view to defining an appropriate intervention - which proved to be a programme lasting some 25 years. The results of the survey were published in a paper in the 150th Anniversary edition of the UK medical journal *The Lancet* (1) in 1973.¹ Given that the core of the paper was the presentation of anthropometric results it is

The story starts in 1973, when the human cost of a catastrophic two-year drought became evident.

¹ This turned out to be the first gathering of anthropometric evidence on the crisis anywhere in the Sahel (the multi-country CDC Atlanta surveys came only several months later) and was eagerly seized upon by the FAO head of nutrition who was in Ougadougou at that time. The consultants for the survey were part of a small and partly academically based group – the London Technical Group - with an interest in the application of science to disaster relief, and the *Lancet* paper reflects their interest in a then current nutritional debate on protein requirements.

interesting to see a quite careful description of the economic and ethnic background, and indeed on the first page a map, unexpected in *The Lancet*, showing the movements in that year of different groups of pastoralists. All of this was intended to inform a key comparison between the nutritional status of sedentary village children and those of mobile herders. The anthropometric results on children indicated there was no evidence of recent outright starvation; yet this was an acutely impoverished population visited some ten months after a critically failed harvest and still three months before the new harvest was due. Rations of sorghum had been distributed for three months, but these did not reach all of the population and at best offered coverage of one-third of calories requirements. The question arose of how people coped in such circumstances, but the only answer offered in the paper concerned the consumption of collected wild foods. On the other hand it is perhaps not too fanciful to say that this first attempt to match up nutritional status and socio-economic factors, though very modest in itself, sparked an interest that became a constant in SCUK and was fundamental to the eventual development of HEA.

Just two months after the Sahel survey came the television pictures of biblical famine in Ethiopia – today superseded in international memory by the sadly similar pictures of the 1984 famine. In late 1973 international NGOs arrived in Ethiopia for the very first time, with Oxfam as the first UK organisation to take up position in road-side famine camps, in the south of the affected province of Wollo. SCUK arrived a couple of weeks later and took over camps in the far north of the Province.¹ One immediate observation was the preponderance of men in the southern camps and their comparative absence alongside women and children in the northern camps. It turned out that the reason was that although the epicentre of the famine was in northern districts², men in quite unprecedented numbers had walked south to try to find work in towns or in the commercial, irrigated sugar plantation in the lowland. Most failed to find any employment, and so far from being able to return home with money to save their families, became famished themselves and stranded in the south. Meanwhile their families were arriving in the northern camps.³

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Agency workers with a sympathetic curiosity about what had happened to people⁴ were picking up such information quite informally well before field surveys were conducted during 1974 in the immediate post-crisis period when planning for rehabilitation was afoot

¹ Amongst the minority of experienced agency workers were around half-a-dozen nurses and doctors who had served a few years earlier in the relief programme for Biafra in the Nigerian civil war.

² This was an area roughly covering the historical district of Lasta in Wollo Province and immediately neighbouring areas of Tigray Province, a dramatic landscape of mountains and cliffs and gorges, very remote from the motor-road where the famine camps were located. During 1973 tens of thousands of starving people had managed to survive the two-to-four day walk down to the road where they would finally be visible to the rest of the world. The same area had been at the centre of an unreported drought-famine in the mid-1960s and was again the worst-hit area of the wider-spread crisis of 1984.

³ Author's memory.

⁴ Behind the curiosity was a burning question: not simply what had happened, but how *could* this have happened. It is difficult to remember now quite what a shock the Sahel drought and even more the Ethiopian famine were at the time, not only, of course, to the immediate victims but to their educated, urban compatriots and to the international community at large. Academics had over some years begun worrying about the evidence that sub-Saharan Africa was increasingly failing to achieve a rate of growth in food production near to that of population growth. But imminent mass starvation was quite another matter, and indeed up to the late 1960s it was South Asia, not Africa, that was identified with famines (apart from the Biafra siege-famine).

(inter alia by the Ethiopian Nutrition Institute and SCUK). There was a certain propensity for research in the SCUK team, and one element was simply recording prices of grain and pulses in the local market, week after week, to get an idea of the trend but without a settled framework of analysis in mind¹.

Soon, however, analytical approaches to the famine events did develop. There was a strong political commentary both for the Sahel and Ethiopia, with a notably 'left wing' flavour, whether blaming the colonial and neo-colonial heritage in the Sahel or the regime of the emperor Haile Selassie in Ethiopia.² But at the same time, on a more objective front, field information was leading to published papers including by SCUK team members, on themes varying from the epidemiology of famine to economic and social responses (2, 3). One 1975 paper delivered to a British Nutrition Society symposium on famine (4) dwells on the evidence that in Ethiopia the acute crop failure up to late 1972 (i.e. influencing consumption in 1973) was quite localised and the national harvest should have been sufficient to cover the needs of the populations in Wollo who suffered famine. The conclusion that 'People died in Ethiopia not because of extreme shortage of food, i.e. famine, but because of an extreme shortage of money, i.e. poverty' is perhaps a bit cavalier, but it contains at least a glimmer of the fundamental insight into food access or 'entitlements' that made Amartya Sen's 1981 study Poverty and Famines a seminal work in the general field (5).

Further association of SCUK field staff with university-based colleagues fed into distant antecedents of HEA, including a USAID-funded helicopter-based nutrition-plus survey in 1974 in the province of Harerge in eastern Ethiopia, in which, more formally and on far greater scale than in Burkina Faso, an attempt was made to marry anthropometric measurement with socio-economic information (6).

A USAID-funded helicopter survey in 1974 further developed the basic precepts on which HEA was based.

The Food Aid Imperative

Although it is now a rounded livelihoods analysis, HEA has its roots very directly in food aid, most specifically in Ethiopia. The early 1970s droughts brought international bulk relief food aid programmes for the first time to a number of sub-Saharan African countries. Ethiopia was for nearly three decades by far the biggest and most regular recipient, until from the early 2000s the bulk of relief distribution was replaced by a multi-year Productive Safety Nets Programme which included also cash-based assistance to households. In some years of the 1970s Ethiopia essentially imported as much food aid as could be then got through its Red Sea port of Assab, and to a lesser extent through Massawa in Eritrea Province, some 200-250,000 tonnes per year. For a decade or more after the 1984 famine Ethiopia was importing between 500,000 and 1mn tonnes of food aid per year, including through

¹ The data were later used in the paper: Seaman J. & Holt J. *Markets and Famines in the Third World. Disasters* 4 (3) 1980 and by Amartya Sen in his 1981 book Poverty and Famines (Ref. 5)

² The debates were particularly led from France by local and Sahelian commentators who inter-alia formed a Comité d'Information Sahel which published the book: Qui se Nourrit de la Famine en Afrique? Le Dossier Politique de la Faim au Sahel (Who feeds off famine in Africa? The political dossier of hunger in the Sahel). Maspero, Paris 1975. On Ethiopia, groups of Ethiopian emigré students and others in the UK, France and elsewhere orchestrated a commentary on the famine with wider political reference that possibly contributed to the fall of Haile Selassie in 1974 and certainly to the Marxist ideology of the regime that finally emerged. But the book The Politics of Starvation by Jack Shepherd Carnegie Endowment for International Peace, Washington 1975 is not another ideologically-based analysis but a detailed account of official responses to the Ethiopian famine, from the alleged non-response of Haile Selassie's government to the international interventions and the aftermath.

Djibouti, again mostly for relief but also with up to 100,000 tonnes from WFP going to Africa's biggest regular food-for-work programme, government-run and centred on soil conservation, with its origins as early as 1974.

From the mid-1980s SCUK, like several other international NGOs, became an important instrument in the distribution of food relief, especially in Ethiopia, and in the process saw its annual budget as a charity grow rapidly. Food aid is an expensive business, and it is not surprising that as programmes extended from one year to the next, funders wanted to see better evidence of need. Visible starvation in a population as evidence is of course unacceptably late, both morally and in terms of any capacity to respond effectively. Nutritional surveillance may allow one step earlier, to show for a given population a declining trend in child nutritional status over, say, three months, but it was still rather late evidence for a food relief system that took up to six months from donor pledge to local distribution.

The early warning imperative

The need was therefore for reliable warning of unusual hunger that allowed something like a six-month period for initiating a response. The fundamental trigger was food crop production performance, and the question asked was essentially: on the basis of harvest prospects or results, how many people are likely to need how much food, where and for how long? That was the question that HEA was primarily developed to answer.

Although they didn't engender the level of response given to drought and famine in 1984, the 1973 events caused great shock on the international scene. But in fact they constituted only one element in a perfect storm whose other causes such as the petroleum price hikes and Thai government policy on rice exports caused a near-panic about the world running out of food stocks in the short term, notably stocks for famine relief.¹ The international food crisis led to the first World Food Conference in Rome in late 1974, where one decision in particular is relevant to the development of HEA. It was decided that famine early warning must become a priority matter. In FAO the Global Information and Early Warning System (GIEWS) was set up and continues to this day. We will return to them very directly in a moment.

With the massive increase in food aid, a new early warning requirement emerged. There was a need to provide a reliable six-month warning of unusual hunger – and to distinguish this from year-on-year poverty.

In Ethiopia in 1974 the government's new Ethiopian Relief Commission had set up an office for information on the food situation (which was the host to the Harerge survey mentioned above), and from 1975 this began to evolve into a more structured early warning system, with UNICEF and UK government funding. These days it survives as part of the food security department of the Ministry of Agriculture, making the Ethiopia early warning system by far the longest-running national system in Africa, although subsequently much expanded and developed. Alongside a routine of situational reporting from district government through provincial to national government, the Ethiopian early warning department has tried out a number of analytical methodologies over the years, from a food accounting matrix system in the 1970s to the installation of the HEA framework thirty years later.

The progress of analytical approaches

¹ Personal communication from Steve Wiggins, international food prices analyst, Overseas Development Institute, London

There was a period of decreased volatility in rainy seasons in the late 1970s and the early 1980s, but some years in some areas were worse than others. A problem faced by the Ethiopian early warning system was what were perceived as false alarms. Statements about poor production, and predictions of local hunger, were for one reason or another not always responded to by donors, or at least food aid only arrived extremely late; yet there was no compelling evidence of unusual hunger amongst the populations in question. This led to the beginning of more serious consideration of how people coped for themselves, and how 'coping mechanisms' could be incorporated in the information collected monthly by the district early warning committees, a subject pursued after the huge 1984/85 famine crisis which inter alia sharply renewed interest in early warning. In-house in SCUK, in the run-up to this crisis, there had been a special effort to put together the early warning signs suggesting a major event according to an 'entitlements' logic, as they had done for Karamoja, Uganda in 1979/80, considering production, market access, livestock sales and food prices.

Indeed early warning was not an exclusively Ethiopian business. The 1984 drought had been an even greater international phenomenon than that in 1973, including again all the countries in the semi-arid latitudes just south of the Sahara from Mauritania to Somalia. From the mid-1980s the European Union began to fund the development of national early warning systems in the Sahel, beginning in Chad and Mali with technical assistance from the Belgian NGO AEDS. They applied a convergence-of-evidence methodology to the government systems which still holds in its' essentials today.

Meanwhile SCUK had begun a programme in Mali in 1985 and was interested in making progress on the food security assessment front. Between 1986 and 1994 it funded from its own discretionary resources a project to develop a food security information system, eventually accompanied by village food security projects. The most lasting technical result was a deeper understanding of households' adaptation to shock, eventually reported in a book written by the project's coordinator for the first two or so years, who was a secondee from International Development Institute (IDS) at Sussex University (7). The central question was the distinction between on the one hand, coping mechanisms that got households out of the worst trouble (e.g. by increased casual employment) without negative effects in the longer term, and on the other hand actions – notably decapitalisation in land or livestock – that resulted in a permanent downward ratcheting of the household's economic status. If this study helped point the way to the Sustainable Livelihoods Framework, it also added some potential refinement in attempts to factor in coping as a part of early warning predictions. There is a quite direct link with HEA, whose methodology includes both a 'normal' baseline of how people run their household economy, and a capacity to predict the effects of shocks (Outcome Analysis) in which an appreciation of households' coping capacity is central.

In Ethiopia from the mid-1980s to the mid-1990s SCUK was unique amongst agencies in investing (from its own discretionary resources) in the challenging business of a continuous system of nutrition surveillance, year after year, over a wide geography. This programme operated in four of the major regions and fed into SCUK's permanent health programme as well as having a formal association with the government's early warning service. The evidence of the connection between mortality, seasonality and child nutrition status was reported in a scientific paper (8); it is fair to say that nutritional anthropometry is a trailing or late indicator, and of itself this system did not offer firm early warning, or perhaps more

particularly, the firm prediction of the effects of bad but not catastrophic seasons.¹ But this last issue was perhaps the greatest challenge for early warning in general, given the continued food aid and the donors' increasing concern about its apparent permanence and its very high cost. As we shall see in the next section, it was this that above all triggered the final development of the HEA approach.

Although SCUK in Ethiopia was running mainly a public health programme as well as nutritional relief, it retained its interest also in the economic analysis of food failure. From 1990 political rather than drought events now pushed the subject further. Somalia suffered the final national collapse which is not resolved to this day; and in Ethiopia the rebel forces from the north finally overran the *Derg* regime and formed a new government in what proved a peaceful transition. One major issue coming out of the Somalia situation was the effect of the civil war on the neighbouring Ethiopian areas, especially the Ogaden. Tens of thousands of 'returnees' from town and countryside in Somalia were in majority hosted outside the formal relief camps and Ogaden towns by their kinfolk in the mainly pastoralist Ogaden population.

In 1991, memory in USAID as well as SCUK HQ of the 1974 helicopter-assisted 'nutrition plus' survey now prompted a new USAID-funded helicopter survey of the Ogaden. What was the food and nutritional situation for all, and what was the capacity of the Ogaden to support the economic 'reintegration' of the returnees? As in 1974, an extensive anthropometric survey was combined with an economic and social questionnaire. Methodologically the survey directors (one a veteran of 1974) were building on the 1974 survey, and on the economic front a more specific inquiry was made into such matters as livestock holdings, the grain market and the terms of trade for livestock. This did not represent what today we might consider as a full 'livelihoods' picture, but it was a step forward in trying to define how people make ends meet and cope with economic pressure. On the nutritional front it was found that, as a testament to communal sharing, there was no significant difference between host and returnee children, both being in borderline acceptable condition as regards evidence of nutritional wasting (9). Prompted by the interest in the Ogaden survey, a helicopter-based exercise with the same methodology was carried out in 1992 to cover all of Somaliland, this time funded by Comic Relief and OFDA. The concern was both about the effects of the recent war and of 'repatriation' from Ethiopia and from the still volatile south of Somalia, and about the effects of recent drought. Once again the report (10) showed essentially how the rural economy was working, this time with some detail about the vital export of animals to the Gulf countries and about the market sources of grain emanating from relief camps in Ethiopia. On the nutrition front a similar borderline situation was found, with some worry about the status of older children and what that might mean, and a discussion of the significant difference in nutritional status between the west and the east of the country.

Three helicopter surveys in the early 1990s - in the Ogaden, Somaliland and the highlands of north-west Ethiopia - progressively added critical components to what was to become the HEA methodology.

A third helicopter-based survey was undertaken by SCUK in 1993 covering the highlands of north-west Ethiopia, funded by the EEC and the UK ODA (DFID). This was the first chance for government and agencies to gain a wide, comparative geographical view of a now peaceful area that had been for years at the heart of warfare, drought and famine. The ambition was

¹ The Nutrition Surveillance Programme was designed to pick up general trends across large areas; but any effects on this scale were being effectively dealt with by food aid at the time. The main practical interest in relation to nutritional status was to confirm 'pocket' problems.

now more overtly to describe livelihoods and coping, alongside current nutrition status analysis, as can be seen from the title of the report: ‘Making Ends Meet’ (11). The subtitle ‘A survey of the food economy of the Ethiopian north-east highlands’ was the first time that the term ‘food economy’ was used, and ‘food economy analysis’ was to become the first name for HEA. The methodology now embraced substantial geographical (partly ecologically-based) comparisons inter alia of grain production, livestock assets and sales, food aid and of course nutritional status, and a more substantial and rounded description of the basics of livelihoods than was made in the Ogaden and Somaliland surveys.

A methodological breakthrough

This was still far from being HEA. Nevertheless it is possible to say that by the end of the Ethiopia highlands survey the directors and their technical mentors at HQ were well-primed for whatever might now happen to promote an advance in food security assessment and early warning methodology. Without assuming the teleological progression mentioned in the introduction, there is a feeling here of a number of jigsaw pieces falling into place. Meanwhile, from the outset of the 1990s there had been major technological and commercial developments in the computing power available to ordinary organisations and individuals via desktop or ‘personal’ computers, accompanied by packages giving general access to the creation of programs and by the increasing availability of mapping software.

Because of its work over the years, SCUK had gained some reputation for its food security analysis, especially along the lines of how people ‘made ends meet’ through buying and selling activities on the market as well as consuming their own produce. Amongst the people who recognised this was an economist associated with the FAO GIEWS (the global early warning system mentioned above), who was an acquaintance of the Africa head at SCUK HQ. And GIEWS had a problem. For many years it had been a prime world resource for statistics on developing country food availability – production, stocks and import/export – and the ‘food balance’ derived from comparing the food available with the requirement of the population. For some time GIEWS had been encountering criticism, including from SCUK, that their statements of per capita food availability could not account for how much or how little food people actually managed to get their hands on. Reflecting Sen’s analysis (see above), availability of food on markets was one thing, physical and financial access to it another. Or put in economists’ terms, the supply side was one thing, the demand side another. This clearly had a major bearing on early warning.

At the beginning of the 1990s FAO established its own Landsat terminal to process satellite environmental data, and began observing widespread apparent crop failures in Africa which did not lead to famines. Why? One response by GIEWS was to ask SCUK to see if they could help to devise a quantified method for dealing with the question of access, or the demand side. A three-year grant was obtained from the EC from 1993 to fund a small project based in SCUK HQ, associated with a larger FAO digitisation project. SCUK’s task was to find a way of representing food access on a comparative geographical basis, via a computer program.

In 1993 the Risk Map project was initiated. Over the course of the 3-year project, important steps were made in the development of a method to quantify the access side of household food economy and in livelihood zoning.

The short-term result was the RiskMap program (12); but what is crucial to our longer-term story is the associated methodological breakthrough on analysing access. So far in the surveys and other work in the field that SCUK had conducted, the elements of food access had been identified and described and to some extent quantified, but they had not been

integrated into a single calculation. Now they needed to be. One element of the methodological breakthrough was the devising of a way of dividing a country or its regions according to ecological and economic criteria relevant to livelihoods rather than simply following administrative divisions – what became formalised as Livelihoods Zoning.¹ A second part of the breakthrough was to establish criteria to divide the population into poorer and wealthier groups, reflecting the fact that within the same village threats to food security differ by wealth, and there is usually no meaningful ‘average’.

But perhaps the biggest element of the breakthrough was in classifying and quantifying food security (at poorer and wealthier household levels) in terms of food ‘income’ from all sources, that is, not only own agricultural production, but via cash from casual labour and other work, or from collected wild foods, or gifts, and uniting these in the measure of the satisfaction of household calorie requirements. This was turning Sen’s entitlement theory into a method for practical application, identifying and obtaining the data, however ‘noisy’, to fit the demands of a single analytical framework. The detailed questions of where people got the cash to purchase food followed on, rounding out the income information. Furthermore, a basic requirement of the RiskMap project was to help compare potential food relief requirements geographically. The method devised was to mathematically process changing assumptions about crop production, price and other data values – i.e. shocks - against the geographical baselines and plot out the comparative food deficits on maps. The results were intended as indicative, to guide further inquiry and geographical prioritising.

Those who have a knowledge of HEA will see that RiskMap mapped out, so to speak, the HEA baseline and outcome analysis methodology, together with fieldwork methods to gain the required data. These have been highly developed in the intervening years, and the RiskMap methodology may not seem today like very much of a discovery; but as also with greater technical advances, things are a lot more obvious once they have been discovered. And while RiskMap and the basic HEA approach might seem to have been essentially created in the space of three or four years, in fact, as we have described, the ground was prepared over a very long time.

HEA begins to be applied

For all its virtues as a methodological ground-breaker, the RiskMap program as a self-contained early warning device hardly took off, especially as it ran up (not always very diplomatically) against indicator-based methodologies in already institutionalised systems promoted inter alia by WFP’s Vulnerability and Mapping Unit (VAM) as well as FEWS NET, an international famine early warning network programme commissioned by USAID ever since 1985. Yet very soon Food Economy Analysis - HEA² - began to flourish. The world was evidently not ready for automated early warning but proved receptive to a clear, livelihoods-based assessment methodology.

Now there occurred once again a combination of a pressing need and the accident of personal acquaintance. In this case the need came from the big relief operation for southern Sudan in the midst of the protracted Sudanese civil war – Operation Lifeline Sudan. The acquaintance was between SCUK’s Africa head, together with the Regional Advisor in Nairobi, and the head of WFP’s Kenya programme who was also responsible for WFP’s food

¹ The countries where fieldwork for baseline information was carried out were: Angola, Zimbabwe, Mozambique, Malawi, Tanzania, Kenya, Uganda, Ethiopia, North Sudan and Mali and Burkina Faso.

² The name Household Economy Analysis (HEA) began to be used in place of Food Economy Analysis from around 2000, in recognition of the fact that it was more than a food aid needs assessment tool. In this paper, for convenience we will from this point only use the term HEA.

relief programme for southern Sudan. The problem was that some \$100 mn worth of food aid was being distributed each year with what the donors increasingly considered unsatisfactory evidence of need: they wanted a more transparent justification than was available from the current assessments. The WFP head was a person given to thinking 'outside the box', and what he understood of SCUK's new approach appealed to him. In 1994 he invited SCUK to second an officer (with UK government funding) essentially to graft an HEA-based early warning system, with a dedicated database, onto the then-operating annual assessment system.

The result over the next roughly five years constituted a major first 'splash' for the approach: donors greatly appreciated a reportage that offered a joined-up narrative on evidence that hung together – because it exhibited a transparent analytical framework (13). The initiative was eventually subsumed (or faded) into a revised system run by WFP with other methodological approaches, but even after ten years the analytical approach remained influential in the round-table analysis undertaken by partners every year to assess the southern Sudan situation. And as we shall see below, this residual element sparked the eventual flourishing of HEA in West Africa.

In 1994 the first on-the-ground HEA-based food security information system was established in South Sudan through WFP and linked to decision-making systems in Operation Lifeline Sudan.

The Sudan initiative soon stimulated wider interest in Kenya and elsewhere in East/North-east Africa, and provided the training for future key HEA analysts. In 1996 the SCUK Regional office in Nairobi set up a Food Economy Analysis Team (FEAT), and from late 1996 to 1998 some of the first one-off food economy surveys were commissioned by UNHCR in association with WFP: in Kakuma, north-west Kenya for where there were refugees from southern, Ethiopia, Somalia, Uganda, Zaire, Rwanda and Burundi; in Dadaab, north-east Kenya, for Somali refugees; in eastern Sudan for Ethiopian and Eritrean refugees; and in north-west Tanzania for Burundian refugees. Thus at a very early stage, HEA, modeled on ordinary African agricultural village economies, had to adapt to the peculiar circumstances of refugee camps and their economies, including analysis of dependence on rations, on sub-groups such as unaccompanied children, and on the refugees' use of the market. In this it succeeded, as testified by further requests from UNHCR up to 2013, as it succeeded in the following decade in adapting to the different challenge of urban HEA surveys.¹

In the mid-1990s too, the Food Security Analysis Unit for Somalia² was set up in Nairobi with EU funding, later to be taken over by FAO. This was in effect the formal early warning and monitoring system for food security in Somalia (a country without a government), and from the outset until today has been a multi-disciplinary venture including a food economy/HEA element, with an SCUK seconded Food Economy Officer resident for the first few years on ODA (UK Government) funding. One of the first contributions was a Food Economy Zones map of the country as a reporting template, to which food economy baseline information was attached.

¹ Since 2000 some dozen urban HEA surveys have been undertaken ranging as far afield as Harare, Abidjan, Djibouti, Gaza, Port-au-Prince and Jakarta, often concentrating on slum or other specified areas. A necessary adaptation is in classifying wealth groups in relation to cash income types and levels, since there is no (or very minimal) direct food income from cultivation and livestock. A special urban survey for UNHCR in Nairobi in 2010 dealt with settled groups of refugees from north-east Africa and the Great Lakes countries.

² Later called the Food Security and Nutrition Analysis Unit (FSNAU)

Meanwhile, with the support of FEAT officers, SCUK country offices further afield in Africa initiated food economy baseline studies for their rural programmes in Darfur, western Sudan, in Rwanda, in Ethiopia, in Malawi, and in Tanzania with WFP where an early version of the baseline 'single zone spreadsheet' was used to enhance modelling of the results of shocks.¹ Darfur was to see a particularly longstanding effort at HEA-based food security monitoring/early warning, with drought threat at the centre of concern. This ended only when the civil conflict ended SCUK's regular programme. In the Rwanda programme HEA also became a substantial activity, beginning with a needs assessment of returned refugees as well as of their hosts in Byumba in 1997, but expanding into a countrywide series of surveys for the general SCUK programme. HEA work related to conflict continued: in neighbouring Burundi from 1998 SCUK seconded an officer to WFP to run the monitoring of food security in the displaced people sites around the country.

The mid- to late-90s saw the establishment of HEA-based systems in Somalia, Rwanda and Burundi and a proliferation of baseline studies in Darfur, western Sudan, Ethiopia, and Tanzania among others, as well as the first use of HEA in refugee settings.

The work in Malawi began with the original RiskMap project in 1995 in which a particularly developed national livelihood zones map was created, again with associated HEA baseline data; this was to have an important influence in the following decade, as we shall see. A similar operation was conducted from 1996 in Zimbabwe, similarly influencing developments in the next decade. By 1998 the methodology was well-enough established to be set out in a paper published by ODI (14). By 2000 SCUK felt in a position to publish a book on HEA - a resource manual for practitioners (15), and in 2007 SCUK and the Food Economy Group expanded on this idea to produce a Practitioner's Guide to the Household Economy Approach, a digital document representing the most substantial available statement of the methodology and associated training materials. At the same time a book on HEA aimed at planners and policy-makers was prepared, published in 2008 (17, 18).

HEA branches out from SCUK

As we have described above, HEA was developed primarily to answer emergency food aid questions, and for a decade from 1984/5 the distribution of food aid in Africa, especially in Ethiopia, became a big part of SCUK's overall programme in funding terms. There were voices in the organisation that began questioning not only what they felt was a too-great dependence of SCUK on food aid programmes but also the apparent lack of a child-focus in associated work such as HEA. In regard to the latter the actual, as well as symbolic, question was: "Where is the child-button on the RiskMap programme?", meaning: how can we be sure of a real and measurable impact on children by this work? Some were not satisfied with the answer that children live in households and their food security depends on the household's food security, which HEA is designed to analyse.

These voices not surprisingly gained in influence as the food aid involvement of SCUK began to fade in the mid-1990s. Or so it seemed to some of the key HEA practitioners of the organisation, a group of whom felt that HEA's star was under imminent threat of waning in SCUK, and so there was a danger that the method would not develop further. In 1998 the

¹ Until the early 2000s HEA baseline data was not generally entered into computer spreadsheets: for analysis, data was summarised from field inquiry forms and transferred manually onto hand-drawn spreadsheets on flip-chart paper displayed to the team on the wall. When the exercise was completed, the sheets would be rolled up and stored with the field forms, and perhaps eventually thrown away with them, thus leaving no record of the data.

Food Economy Group, a consultancy group, was formed in order to focus exclusively on the continued development and widening application of HEA. It is a testament to SCUK that so far from telling these breakaways never to darken their door again, they exhibited the considerable tolerance of a parent, wishing the Group well. Soon enough SCUK was amongst the agencies that offered the Group assignments, and a strong partnership developed that has continued to the present. For the truth is that within SCUK there was still sufficient momentum and authority behind HEA to allow its continued promotion, including the search for funding for associated projects. At the same time there have never been enough qualified HEA people to comfortably answer the demand for HEA work, despite training and capacity-building efforts by SCUK and some training ‘internships’ run by the Food Economy Group.

Until well into the 2000s SCUK was the only NGO undertaking and promoting HEA. Later in that decade and into the new decade two other voluntary agencies came on board: Oxfam and ACF. In 2007 a further technical force was added to the sphere of HEA with the creation of a new UK-based not-for-profit group: Evidence for Development. The founding members were again of long SCUK pedigree, and while still with SCUK they had tackled new subjects for HEA such as coffee production and poverty in Uganda and Ethiopia, and HIV-AIDS and poverty in Swaziland. Also among their special interests has been, on the methodological front, the use of individual household sampling and interviews as against the focus group method that has been the more usual approach. They have also had a special interest in working with universities, including University of Malawi and the University of London.

New developments in the 2000s

In 2000 the Food Economy Group joined Chemonics International as a sub-contractor on the winning bid for FEWS NET. They took on responsibility for the livelihoods analysis aspect of the programme, on the basis of the HEA framework, which, with USAID approval, constituted a major change in FEWS NET’s approach to assessment. This has been maintained to date, with Evidence for Development taking over the role from the Food Economy Group in the new five-year phase from 2012. The work in the last decade helped to introduce HEA-based livelihood zoning and a light form of livelihood profiling in Africa and non-African countries from Central America to Afghanistan. SCUK meanwhile extended its HEA baseline work to South and East Asia. But Africa was, and remains, the main locus of HEA work.

During the decade starting in 2000, HEA became the methodological basis for livelihoods work in FEWS NET, which meant a rapid expansion of the approach to over 20 countries.

Malawi became the first country to run its national early warning assessments firmly on the basis of HEA baselines and analysis. The catalyst was the shock of a food crisis in 2002, amongst whose causes was a limited rain failure, the withdrawal of the long-standing subsidy of fertilisers for maize farmers, and the non-functioning of the national grain reserve. This all resulted in an unprecedented hike in maize prices which was pointed up graphically by FEWS NET but whose significance for rural people was missed by the government and by most agencies because they were unaware of the normally high dependence of poorer farming households upon the staple food market for a good part of the year – that is, they had little understanding of fundamental facts of rural livelihood. But SCUK had been working on HEA in Malawi since the original RiskMap project, and had attempted to orchestrate the response to the threat of hunger in 2002. Now together with FEWS NET they began a collaboration with the Malawi VAC which resulted in the revision of

the original national livelihoods zone map, the establishment of zonal HEA baselines, and their use as the basis for seasonal assessments for every year to the present.

A story similar in outline, but with far greater dimensions, occurred in Ethiopia. Drought in 2002/3 brought another bout of food crisis in a number of parts of the country, but there was one area in the south where the unusual hunger came as a surprise to the government and agencies: the far eastern part of the Southern Nations, Nationalities and Peoples Region (SNNPR). This was a comparatively lush area, dominated by the production of coffee famous in the world for its quality, where food cropping conditions had not been particularly affected. However there had been a different catastrophe, well-known to all but not associated by the authorities with the threat of hunger: the unprecedented fall in international coffee prices. The effect was to induce local coffee farmers to reduce drastically, or entirely abandon, coffee production, since their outgoings would far outstrip their income at the prevailing producer prices. The knock-on effect was that tens of thousands of villagers who normally depended heavily on coffee work now lost a crucial part of their year's income, and with it their capacity to buy the substantial amounts of food that they always needed from the market to make up the balance of their own very limited food harvests. Thus they went hungry.

This failure by the early warning system to understand the real vulnerabilities to hunger in the livelihoods of people was of evident concern to the government and helped to prompt USAID, already looking for improved methods for food security assessment, to propose that a pilot project be undertaken to test the possibility of developing HEA baselines to cover millions of people. In 2004 the Food Economy Group was invited via FEWS NET to take on the training and field supervision for an entire Region. The Region that was chosen was SNNPR, with some 13 million people across a complex of ecologies from high mountains to pastoral lowlands: the regional livelihoods zones map proved to have 40 zones (Malawi has 17). Over the course of a year HEA baselines for each of these were completed, and methods were developed to use these for seasonal assessments; and on the basis of this success USAID decided with the government to go national, and to put the HEA methodology at the heart of the national early warning system's assessment procedures. This would require an enormous effort to establish HEA baseline studies around the country, since up to that time there had been only very limited geographical coverage by HEA, all done by SCUUK. The 17 livelihood zones of the mainly pastoral Somali Region had been covered, and limited parts of agricultural north-east Amhara region. The Food Economy Group won the directorship of the 4-year project centred on a 'Livelihoods Integration Unit' (LIU) within the government early warning system, and from 2006 to 2009 Region by Region the rest of the country was 'HEA'd', with a final total for the country of 175 livelihood zones and baselines for upwards of 60 million rural people. SCUUK was again responsible for covering a pastoral region, this time the eight livelihood zones constituting Afar Region. The baseline profile reports and consolidated database of the LIU were officially launched 2009, and an analytical Atlas of Ethiopian Livelihoods was published in 2010 (15).

In 2006 the Livelihoods Integration Unit was established in Ethiopia, placing HEA at the heart of Ethiopia's national early warning system.

The Ethiopia LIU project was the main trigger or proving-ground for two significant developments in HEA methodology. Up to that time, the essential HEA calculation for early warning was whether a given population over a given period could be expected to maintain their basic food requirement seen in food energy terms, pegged at the standard level of an average of 2100 kcals per person per day – in other words the 'survival threshold'. But the

humanitarian objective was not only that people should physically survive but that they should retain their livelihoods: that is, the price of survival should not include ‘negative coping’ such as the selling off by households of all of their livestock, or of their productive equipment (or even their land, in countries where it was legal, unlike in Ethiopia). In 2004, after discussions with the government and partner agencies, notably WFP, a second threshold was identified and set up methodologically: the ‘Livelihoods Protection Threshold’, which took account of the essential expenditure required to maintain production, and for the consumption of basic non-staple food such as vegetables, and for the supply of household items such as condiments and soap, and for basic education and health costs. This allowed a measure of the assistance required, beyond that for survival, to keep households going as viable economic units.¹

These thresholds were later added to the methodology of the Integrated Food Security Phase Classification (IPC), a tool for improving food security analysis and decision-making originally created from 2005 through the FSAU for Somalia but then developed by FAO and international partners as the basis for an international network of agencies. It offers a standardised scale that integrates food security, nutrition and livelihood information into a statement about the nature and severity of a crisis and implications for strategic response. HEA descriptions and survival and livelihood protection threshold levels were matched to the five IPC phases between food security and an extreme starvation crisis.

A second advance was the refinement and scaling up of Outcome Analysis as a tool for systematic seasonal assessment, that is the simulation of computer based scenarios where shocks are imposed upon the livelihood baseline of a given population (the framework of analysis pioneered in the former RiskMap project). If food crops fail by w% compared with the baseline reference figure, and cereals prices rise by x%, and livestock prices fall by y%, and earnings from harvest work fall by z%, what will be the likely effect on households’ access to basic food (Survival) and to the other essentials of life and livelihood (Livelihoods Protection)? A Livelihood Impact Analysis Spreadsheet (LIAS) was devised and linked directly to the HEA Baseline Storage Spreadsheets, initially for a single zone, but eventually capable of dealing with 12 zones over 20 districts, automatically producing outcome graphs and comparative outcome maps to inform decision-making.

In the 2000s HEA was taken up by national food security assessment systems (the VACs) in southern Africa and integrated into the Regional Hunger and Vulnerability Programme (RHVP).

Returning to southern Africa, in the 2000s HEA was widely introduced to national food security assessment systems run by the national Vulnerability Analysis Committees (VACs). With USAID funding, FEWS NET was one main force behind this, while DFID was the other main driver via the regional vulnerability strategy inspired by the 2001/2002 food crisis: the Regional Hunger and Vulnerability Programme (RHVP). Much of the regional VAC system became centred on HEA, with technical support from the Food Economy Group and SCUK. ECHO was among the other funders.

¹ The method deals in ‘total income’, meaning consumption of own-produced food and all cash income, unified mathematically in terms of potential access to food calories (including potential purchase of calories from staples if all cash was devoted to this alone) as a percentage of household calorie requirement – so that the Livelihoods Protection Threshold is expressed as, say, 145% of household calorie requirement.

If there was a danger of fading interest in Malawi when SCUK closed its programme in 2004, FEWS NET was still there to support the VAC. The likelihood of the Malawi VAC's DFID funding being cut was reversed with the poor harvest of 2005 and the successful prediction of price behaviour and related scenarios by FEWS NET, which impressed the donors and had influence in other parts of southern Africa where HEA had been introduced by SCUK with mixed degrees of interest by agencies. One of the challenges of southern Africa as a region is not just the ecological and economic differences within countries, reflected by the livelihood zones maps, but the very different economic levels and political situation presented by different countries. Malawi, for instance, is amongst the poorest countries, seemingly chronically; Mozambique has been on a long recovery from war with it associated impoverishment and economic disruption and stagnation, but has ambitious development plans. Botswana has become to all intents and purpose a 'middle-income' country with a quite advanced government services and social security system, with Namibia not far behind.

During the 2000s the uptake of HEA in Malawi was definite, but beyond SCUK itself mainly on a narrow platform of early warning and prediction. Mozambique's uptake by government and agencies was rather more sporadic or doubtful, as well as geographically disparate; nevertheless it was incremental over the years to the point where it gained more general interest in its uses and methodological respectability. But Botswana from the late 2000s took on HEA fully for its seasonal assessments, joining not only Malawi but Swaziland, Lesotho, and Namibia. In Botswana and Namibia the interest – and challenge for HEA - lay partly in describing wealth groups in a situation where there are significant transfers via social security schemes; and in Botswana there was also some interest in baseline information in relation to insurance schemes for crops and livestock in whose production the middle and better-off wealth groups predominate. For the effects of drought remained a necessary preoccupation, given the overall policies aimed at moving people permanently out of poverty; but in a situation of a developed social security system for the poorest, concern stretches to those – including many middle households – whom drought robs of so much of their assets as well as their current income that they are knocked down, temporarily at least, to the wealth group below them. HEA has offered a clear way of depicting and predicting this phenomenon.

By the end of the decade (2000s) Botswana, Malawi, Swaziland, Lesotho and Namibia had integrated HEA into their national seasonal assessment systems.

As the biggest and most complex economy in the region aside from South Africa, Zimbabwe was an important country for the introduction of HEA. SCUK had maintained an interest that began with the study of its project area in Binga in the far north-west for the Riskmap (which is now part of livelihood zone 20 under 'Poor Resource Kariba Valley'). But on the national level progress was chequered, with a certain amount of division between agencies and departments as to HEA's usefulness for the VAC. The official livelihoods map was established only in 2009 with 23 zones funded by the European Commission and UK DFID (via RHVP) plus a general 'Urban' and a 'National Park' zone, and the livelihoods baselines were completed in 2010. They were considered as part of the VAC 'toolbox' but the Technical Committee did not, up to the end of 2013 at least, fully commit to using the HEA framework for seasonal analysis.

But on another front – the Protracted Relief Programme (PRP II) - HEA became part of a major monitoring and evaluation initiative: the Longitudinal Impact Study For Monitoring and Evaluation (LIME). This involved integrating three distinct but complementary analytical

frameworks: HEA, Benefit-Cost Analysis (BCA) and Most Significant Change. The economic environment was especially challenging in terms of the runaway inflation of the time, which restricted the usual utility of a single baseline made at a given moment for a given area. Under GRM International and with DFID funding, a Livelihood Advisor from the Food Economy Group designed a system of repeated seasonal baselines (four per reference year), monitoring 35-40 households in 20 rural and six urban PRP operating sites, and training and supervising 70 people from nearly 30. In all 104 seasonal livelihood baselines were completed and documented by the end of 2010 in one of the more remarkable adaptations of HEA to a particular programme requirement.

Into the new decade (and beyond?)

In the most recent years HEA has not seen core methodological developments, but there has been progress in its tools and applications. The development of a Herd Dynamics tool to refine seasonal assessments takes account of the staggered effects of drought over sequential subsequent seasons: **the reduction of milk output and livestock mortality may be the most immediate effect, but the failure of new births also has a longer-term effect on both herd-sizes and milk production – vital matters for pastoralists and agro-pastoralists.**

Seasonal assessment is such a fundamental part of HEA that analysis of HEA data in relation to seasonality made a substantial contribution to an international conference on seasonality at IDS Sussex in 2009, with studies from three angles: seasonality in household income, in disaster risk assessment and a newly themed kind of HEA on access to water and its relation to wealth, called Water Economy for Livelihoods (WELS)(20). These considerations of HEA information move away from the ‘bread and butter’ business of early warning, into longer term disaster risk reduction and beyond. Another contribution in this direction from 2008 onwards was in relation to the huge Productive Safety Net Programme (PSNP) in Ethiopia which had taken over from the annual relief food aid programmes of previous decades. From an HEA basis the effects of the associated development credit packages for households were modelled; and more recently work has contributed towards the development of a prediction method for the ‘graduation’ of households from the PSNP programme (Graduation Prediction System - GPS), that is the arrival of households at an economic level where they would withstand ‘bad’ years (if not catastrophic years) when formerly they would have been considered to require relief assistance.

Meanwhile HEA continues to be applied in an increasingly wide geography, informing emergency decisions and contributing to improved programmes and policy-making. A striking example of this has been a West African regional capacity-building programme to build the capacity of government and agency people in the Sahel to systematically apply HEA to strengthen early warning information approaches. The programme has been funded by ECHO in phases between 2009 and 2014 (most recently with OFDA funding too). It is coordinated by SCUK in partnership with Oxfam, ACF and WFP, with the Food Economy Group as the technical arm¹.

From 2009 onwards HEA was systematically integrated into the early warning systems of Sahelian countries, with 60 new HEA baselines developed across the Sahel and northern Nigeria by 2014.

¹ The current 2013-14 phase includes northern Nigeria. Although the Food Economy Group is again giving technical support, notably for Outcome Analysis capacity, this time the baseline training will essentially be given by experienced nationals who have led numbers of HEA surveys since they themselves were trained.

This programme did not come 'out of the blue'. It might even offer a tiny example for the great debate amongst historians about the balance between institutions and individuals in the shaping of history. The trigger event was the 2005 food crisis in Niger. The institutional aspect was SCUK's establishment of a relief programme in Niger, which then converted into a substantive country office. And the individual influence was an ECHO officer newly stationed in Dakar in 2006, having transferred from Nairobi where he had been struck by the contribution of the HEA approach to the round-table deliberations that occurred in the course of the annual South Sudan situation and needs assessments. Now that he was working on humanitarian matters in the Sahel he was keen to see HEA analysis introduced to strengthen understanding of the causes of malnutrition and to improve national early warning systems. From a pilot HEA study in 2007 in SCUK's central Niger project area there grew some 60 HEA baselines across the Sahel and northern Nigeria by 2014. A Pilot Atlas of HEA information was constructed in 2013 (21). The interest of an increasing number of NGOs and of government early warning departments was accompanied by an increasing number Outcome Analysis exercises, to the point that HEA Outcome Analysis is now considered to be a central part of countries' seasonal assessment procedure.

As a form of livelihoods analysis that has spread very widely over recent years it is perhaps surprising that HEA has not been better recognized for its potential usefulness beyond emergency matters. It is true that it *has* been used in a number of development-oriented studies and projects: we have already mentioned early work carried out on coffee producers and poverty, and on HIV/AIDS; more recent HEA-based work has been done on sustainability standards and cocoa producers in Indonesia, on villagers' marketing projects in Ethiopia, and as mentioned above on monitoring of village project outputs in Zimbabwe and on graduation from the safety net in Ethiopia, while SCUK itself has used HEA to help guide its social transfer programmes in both Asia and Africa. And sometimes HEA has been invited down unusual paths, as in a study of the potential threat of avian 'flu in Ethiopia, and of the relationship of the welfare of donkeys to household economy in India and Pakistan.

Given that the nature of disaster-related programmes has been changing, and – with climate change, will continue to evolve - it is likely that the future of HEA will be a bit less dominated than has been its history by short-term food security prediction, although this has been a major achievement and will certainly develop further. The 360-plus full HEA studies that have been done around the developing world since the early 2000s offer in themselves a remarkable resource for further analysis, for instance from the point of view of what they can tell us about the structures of poverty. The aggregated data from these studies is offered on www.heawebsite.org and some overall analysis is offered in the series of papers on Livelihoods at the Limit which this brief history accompanies (22).

But there is a paradox here: the reason there *are* so many HEA baselines is that historically there has been pressure from donors and governments for national coverage for early warning purposes. These have made an increasing contribution to decisions on saving lives and livelihoods, and as such have fulfilled the first ambition of the promoters of HEA. But by the same token it has been difficult for HEA practitioners to step back long enough to promote other uses and to think about methodological development in other directions. HEA has come very far in some twenty years; but it surely has much life ahead of it in one form or another, and much more to contribute as the world continues to evolve.

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