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13. THE RADICAL STATISTICS GROUP

Promoting Critical Statistical Literacy for Progressive Social Change

INTRODUCTION

The Radical Statistics Group is a longstanding independent movement which engages its members and interested citizens in critical analysis of statistics and research. Its members are statisticians, research workers and interested citizens, mainly in the United Kingdom (UK). It has focussed particularly on statistics relating to public policy making, health, education and general welfare. Discussion takes place via the email list and social media, through a range of publications, and face-to-face at the annual conference and other meetings. Thus the group promotes statistics learning, at the same time as supporting action related to issues of public policy and governance.

The very idea that statistics might be valuable, rather than a means of sowing confusion, may be a challenge for many. That statistics might be radical adds a second perspective that this chapter will hope to clarify.

Radical Statistics (RadStats) was founded in 1975, and celebrated its 40th anniversary at a conference in London's Conway Hall in March 2015. It has produced an unbroken publication of a substantial newsletter/journal of original articles and reviews two or three times each year. It has outlived the British Society for Social Responsibility in Science to which it was affiliated (see below).

Nevertheless, the group has changed with the times. There are fewer active subgroups allied to green, radical, peace and democratic movements, just as there are fewer such social movements currently in the UK. The group's newsletter/journal contributions have become more academic, often taking articles from students and young researchers, or early thoughts from more experienced academics who wish to try out new ideas – or to reach an audience which is sympathetic to politically progressive sentiments. Membership has never reached 500, but has hovered between 200 and 450 throughout most of its years.

Throughout these years the Group has frequently returned to themes of statistical literacy and the social functions of quantitative analysis (e.g. MacKenzie, 1979/1998). Although many of its members are academics, and although some of its products are used in academic teaching, the organisation has never itself been housed by an academic institution nor worked by academic rules. It has instead focused on debate and on practical support for campaigning organisations.

A number of factors contributed to the founding of Radical Statistics. In the 1970s many young statisticians were being recruited into several key settings: into posts in academia, which the Robbins Report (1963) had recommended expanding substantially; into the government statistical service to help deal with the expansion of official statistics that had begun after the Second World War, and accelerated from the mid 1960s; and into organisations that relied on experimentation and testing, notably the drug companies. There were chronic concerns, not only from statisticians, about the way that statistics were being cited and used in policy debates by politicians, the media and business. And the ‘spirit of the age’, including questioning rather than accepting ‘what you were told’, was evident in enough statisticians and researchers to create a critical view from within the profession.

The same spirit created other organisations self-critical of their own profession, including Radical Philosophy and Radical Midwives. Radical Statistics was affiliated to the British Society for Social Responsibility in Science (BSSRS) (see Wellcome Trust, 2015, and the BSSRS archive website address, in the References). All hoped for new approaches in the aftermath of the student uprisings that included those in May 1968, and in the context of recognition of the fluidity of world politics as so many colonies won political independence, as well as successes of the labour movement against national governments and established ideas.

The lack of academic restrictions has allowed Radical Statistics to maintain a perspective critical of the establishment. Its criticisms have generally accepted that statistical practice is closely related to economic interests, especially through the funding of data collection and analysis; see for example the concluding chapter of *Statistics in Society* (Dorling & Simpson, 1998a). The Group has frequently asked ‘Whose interests are being served?’ and allied our publications and meetings to campaigns of anti-racism, of publicly-funded healthcare, of teachers’ working conditions, and against weapons of mass destruction. In every case we have worked for open documentation and justification of statistics, therefore contestable in a democratic process, at the same time as demonstrating those principles by collating statistics of relevance and practical use to the campaign with which we were associated.

This democratic political edge is probably the clearest explanation of what can be radical about statistics. The Group’s current mission is ‘Using statistics to support progressive social change’. At times we have argued that statistical methods themselves can be shaped by political interests (e.g. Dorling & Simpson, 1998b), and supported the idea of a community agenda for statistics.

When the authors of this chapter write of Radical Statistics as ‘we’, it does not mean that we two people are responsible for Radical Statistics, nor that there is any agreed history of the group. It simply refers to ‘some of our contributors at some time’. We two authors have a pride in membership and in the successes of the organisation, but no pretence to producing an official or approved history. There has been no single clear analysis or declaration of what radical statistics are, nor of the aims of Radical Statistics as an organisation.

The annual conference elects a committee of three to support activity and oversee group continuity in the following year, but there are few formal rules and no formal constitution. That lack of formal structure may appear to be a weakness, but has also been seen as a strength. The group has seldom been troubled by disputes, and has welcomed new members and committee members without any more contribution from them than they are willing to offer. Nonetheless, the organisation's successes have carried it to longevity. This chapter aims to define us through our activities, though it will not be the last word.

As with many grassroots organisations, the group's history includes some successful, and some less successful, campaigns. Several of these are discussed below.



Figure 1. The meanings of 'unemployment'

A SHORT HISTORY OF RADSTATS: ACHIEVEMENTS AND DISAPPOINTMENTS

Difficult Early Relationships with the Relevant Professional Association

One of the Group's first initiatives had to do with (one of the two) professional organisations of statisticians in the UK at the time, the Royal Statistical Society (RSS). This summary comes from an account in a recent issue of *Radical Statistics* (Simpson, Goldstein, Hill, Bibby, & Evans, 2013).

In the spring of 1975, Radical Statistics had recently held its inaugural meeting. Campbell Adamson, ex-President of the Confederation of British Industry (CBI, the main UK business lobbying organisation), with no statistical affiliation himself, was

nominated first in an election for RSS Council membership. This was at a time when the Council usually nominated just enough candidates to replace Council members whose term of office was ending, with the aim of avoiding contested elections. Campbell Adamson's 'externality' to the profession was not so much the issue, as was the place that the CBI represented in British society at a time of large public disputes in which business and labour were opposed, and the lack of elections to give a say to the RSS membership (its 'Fellows'). Radical Statistics' role was first to nominate one of its women members as a candidate for RSS Council, thus forcing an election, in which she was elected and Campbell Adamson was the only candidate not to be elected!

When the new Council nonetheless proposed Adamson for President, Radical Statistics members looked for an alternative candidate, and encouraged a relatively young statistician to stand. He was not active in Radical Statistics but did believe that an election was necessary to allow RSS Fellows to express their views. They did so by convincingly electing him with 932 votes to Adamson's 614.

The presidential election may have touched a democratic nerve in many RSS members, who, even if not concerned about the political significance of the candidates, felt that Adamson's failure to be elected to Council should have ruled him out for nomination for President by Council. Council was perceived to be ignoring the membership's expressed wishes, and this was explicitly stated as the main reason not to vote for Adamson, by his opponent's proposers.

Nowadays, the RSS routinely holds elections to fill Council places. The relationship between the RSS and the many of its members who are sympathetic to the aims of RadStats is much more cordial (see below). In addition, there are generally one or more Council members who have an association with Radical Statistics, or broad support for many of its ideas.

Campaigns Against the Threats to the NHS, from the Late 1970s

The National Health Service was established in 1948 in the four countries of the UK on a 'free at the point of use' basis. This was still the situation in the 1960s, although charges had been introduced for a few elements, including dentistry, glasses and prescriptions (Radical Statistics Health Group, 1987). At the same time, countries like Canada and Australia strengthened their social provision of health care from the 1960s, through taxation and insurance schemes. In the 1970s, there were pressures for change, including moving to an insurance based service with item of service payments, increasing charges and making greater use of what was then a small private sector. The Radical Statistics Health Group (RSHG) has continually subjected the claims made in support of such changes to critical scrutiny.

RSHG produced its first pamphlet, *Whose Priorities?* in 1976. This was a critical examination of use of data in a recent government policy document. Its second pamphlet, *In defence of the NHS* (RSHG, 1977), was a critique of proposed changes to the NHS and was submitted as evidence to the Royal Commission on the NHS. The

Group continued to be active, selling 4,000 copies of *The unofficial guide to official health statistics* (RSHG, 1980). During the 1980s RSHG contributed many articles to books and magazines and brought these together in book format with *Facing the Figures: What is really happening to the National Health Service* (RSHG, 1987). A revised book version of the 1980 unofficial guide was later published commercially, but with less success (Kerrison & Macfarlane, 2000). (See the Radical Statistics website.)

Since the 1980s, Labour, coalition (Con-Lib) and Conservative governments have all made changes, such as the introduction of an internal market, outsourcing of services to the private sector and use of the private finance initiative to fund capital developments. However, in most cases, the service has remained free at the point of use (Brown, 2015). In England the Health and Social Care Act, 2012 made many changes to the structure and governance of health services. One of its consequences was to introduce barriers to accessing administrative data about health care for purposes of research and public health analysis, and members of RSHG have been active in pointing to the consequences, both directly and through other organisations.

Concerns about the Quality of UK Official Statistics Generally

Radical Statistics frequently carries critiques of official statistics, from projections of traffic and of housing, to statistics of homelessness, unemployment, food production and ethnicity.

One of the original subgroups, the Teaching Group, did not meet for long, but two of its members decided to produce an early spinoff. This was the book *Demystifying Social Statistics* (Irvine, Miles, & Evans, 1979), to which many RadStats members contributed. It had as a target audience left-leaning students and academics, and quickly became a key reference in explaining the ways in which statistics and statistical method are ‘socially constructed’. The book *Statistics in Society* (Dorling & Simpson, 1998a), edited by the then co-editors of *Radical Statistics*, follows similarly broad themes and appeared on many higher education reading lists. Both of these books were critical of some aspects of official statistics in particular – but overall supportive of their careful and critical use.

Criticisms of the government’s use of statistics in publications by members of RadStats in the 1980s helped to inspire the 1989 Channel 4 TV Programme *Cooking the Books*. The programme was a key event leading to debates in the Royal Statistical Society on the integrity of official statistics. These debates helped to spur the Labour Party to pledge to establish an independent statistical service as part of its 1997 election manifesto. This led to the establishment in 2000 of what was to become the UK Statistics Authority. This body, under a number of able Chairs and Board members, has developed its dual role in British civil society, where it is responsible for overseeing the work of the ONS (Office for National Statistics), and also for monitoring of all UK official statistics. It has made a number of powerful interventions, being periodically called on to adjudicate on a minister’s use of

statistics in public policy discussions, and occasionally to ask the minister (even the Prime Minister) to amend their claims (see UK Statistics Authority website).

*Concerns about Information Provision in Other Policy Areas:
The Work of Other Subgroups*

In the mid-1970s, a number of other areas of activity sprang up, under the auspices of a ‘subgroup’. These subgroups were usually inspired by a handful of members who carried through the practical work involved. Guidelines for subgroups were published in *Radical Statistics* (Simpson, 1992), as encouragement, rather than as constitutional regulations.

A key subgroup was formed in response to the highlighting of ‘immigration’ as an issue by a prominent Conservative politician, Enoch Powell from 1968 and by the incoming leader of the Conservative party, Margaret Thatcher from 1975, and also to the rise of the National Front (a group with racist rhetoric and provocative street tactics) at around the same time. This subgroup aimed to challenge accepted views on these issues by providing for the first time a statistical history of immigration and immigrant demography and conditions. The Radical Statistics Race Group published *Britain’s Black Population* in 1980 with the Runnymede Trust, which has aimed since the 1960s ‘to promote a successful multi-ethnic Britain’. There was a second edition in 1988 that focused more on racism within Britain.

At around the same time, a number of academic publications were challenging the ‘progressive’ consensus in education, which included ‘child-centred’ teaching methods in primary schools and comprehensive (non-selective) secondary schooling. The Radical Statistics Education Group published a critique of some of these ‘challenger’ studies in *Reading between the numbers: A critical guide to educational research* (1982), addressed in part to education professionals – but also addressed to ‘anyone who is interested in education’ (p. 3). The group also published a pamphlet on educational spending in time for the 1987 general election in the UK.

In 1979, the US military announced its intention to locate nuclear ‘cruise’ missiles at its Greenham Common base, near London, as part of moves to counter the ‘Soviet military threat’. There were a variety of responses, including many large demonstrations around the country, and the establishment of the women’s peace camp at Greenham Common. Part of the response from Radical Statistics came from the Nuclear Disarmament Group, with their publication *The Nuclear Numbers Game: Understanding the statistics behind the bombs* (1982). Its stated aim was “to help people decide when and how to use, attack, or reject, data ... to help others to understand how statistics can be used to justify the possession and acquisition of nuclear weapons, and how they can be used to oppose them” (p. 8).

Since 1990, the subgroups have been less active, with the exception of the Health Group. A short-lived Population Studies Group formed in 2011 to write a critique of

the Optimum Population Trust (Radical Statistics Population Studies Group, 2011). The Reduced Statistics Group formed the same year to review the impact of reduced public expenditure on official statistics.

Attempts to Provide No-Cost Statistical Support to Campaigns: The 'Fire Brigade' and Other Initiatives

From the start of the Group's existence, there were requests for assistance from various professional and community groups, often responding to publications or contributions to the news media, for example, from a person identified with Radical Statistics Health Group.



Figure 2. Educational research aims to persuade

Early on, we thought of such responses as relating to the idea of a 'fire brigade'. This also recalled the Science Information Centres set up by the radical science movement at universities (especially in North America). The 'fire brigade' approach has had mixed success for several reasons. First, we quickly experienced political tensions that such initiatives can produce and that could not be resolved by consensus. For example, a member brought forward the request from a group of home-owners in their own locale – to help produce statistics for a campaign *against* the local

authority's decision to build social housing in the 'backyard' of these owner-occupiers! Second, as we soon found, most requests for help came via one or other particular RadStats member, already known to the local campaigning group, perhaps because the member was already involved in the campaign as an activist. The needs were often for immediate and specific support which we could not reliably find in the timescale, or at all.

Successful support was often from a member involved in the campaign, without requiring Radical Statistics help in any other formal sense, although accounts of the work might be published in the newsletter. For example, a series of statistical analyses of school catchment areas informed debates about proposed school closures (Mar Molinero, 1987).

Over the decades, other forms of non-profit research support have been developed outside Radical Statistics but with the key support of Radical Statistics members. The Community Operational Research Unit was funded for several years, developing a variety of strategies to support and strengthen community organisations with appropriate management and research skills (Ritchie, Taket, & Bryant, 1994). Sheffield Polytechnic (now Sheffield Hallam University) developed a consulting unit for social surveys, often working with local organisations (see e.g. Evans, 1993).

One member in a local authority gained substantial European Regional Development Fund support for an early online neighbourhood statistics system, in parallel with community training. The Bradford Statistics Community Project offered courses in official statistics to local government staff and members of the community (Quiggin, 2001; Reeve, Thomasson, Scott, & Simpson, 2008; Simpson, 2000); the Project also held regular advice sessions. Those who attended more often than not were motivated partly by central government agendas for local information as evidence to support bids for the local work they funded, or for required reports of such work.

From these experiences, it is worth noting that statistical work with community and other non-governmental organisations may vary a good deal on several different dimensions: *applying* statistical analyses; *educating* a broader community in statistical techniques and strategies; and *developing* a community agenda for statistics independently of established policies and priorities. These last two, in particular, are examples of the ways that RadStats promotes statistical literacy and numeracy; see also Evans, Wedege and Yasukawa (2013).

More recently, the American Statistical Association has supported Statistics without Borders, which offers no-cost support to organisations without sufficient funding to buy statistical support. The UK's Royal Statistical Society now has a policy to encourage its members to volunteer support to charities and other non-profit organisations. At present it directs members to Statistics without Borders, and to DataKind, a North American organisation with a UK chapter that links community organisations with computing expertise.

ONGOING ISSUES FOR THE GROUP

Unusual Longevity?

As already indicated, in the 1960s and especially the 1970s, there was a proliferation of ‘radical science’ groups across the English-speaking world, attempting to democratise and broaden the focus of specific professions in the natural and social sciences and the health, educational and other fields. We discussed above the pivotal role played by BSSRS within the radical science movement, and also its support for Radical Statistics, especially in the early days. Nevertheless, by the turn of the century, BSSRS and most of these other groups in the UK had ceased to function (Wellcome Trust, 2015). Indeed, Radical Statistics is one of the few groups that still survive from that time.

This prompts the question: How has the Radical Statistics Group managed to remain active for so long? The following factors seem to us to be important:

- The Group has been fortunate in the skills, generosity, and commitment of many members, including a number of its long-term leaders; in particular, the Health Group has been energetic and successful in formulating and working on problems within their own relatively well-resourced field, which also attracts considerable public interest because of its focus on health.
- The Group has made a number of contributions to official consultations that have been well-received. These have been around the need for independence in the structures for official statistics when the post-1997 government was preparing a Statistics Act, and also in defence of the national health service and other issues.
- Thus RadStats has been accepted by established statistical organisations – including the RSS but others too – as having a point of view worth listening to. Far from turning away from RadStats, sufficient of those who have contributed to RadStats have also recommended its relevance within other organisations.
- Statisticians have had relatively good employment prospects, since their professional (methodological) knowledge is in many ways ‘transferable’ from one area of application to another. Having steady employment is in many cases a helpful pre-condition for being able to support RadStats-type efforts outside of one’s day job.
- Statisticians, in research at least, typically learn to work in teams where a fruitful division of labour and an ability to get along with others from different academic disciplines, are valued and necessary skills.
- The Group has tended to develop an inclusive identity, as a ‘broad church’: neither ‘splits’ nor ‘principled resignations’ have been sought or encouraged. Perhaps more importantly, the Group is perceived as more friendly than many other ‘radical’ organisations. Thus the Group has been able to maintain a community or network of applied researchers and statisticians with radical politics (understood, we think, in the sense of left-of-centre politics and a concern with universal rights).

- The Group has been able to deal firmly with any tendencies towards intemperate language or behaviour, notably on its electronic mailing list.
- The Group has managed to continue an unbroken series of annual conferences over 40 years with a ‘cumulative attendance’ of over one thousand.
- The Group has been able to produce a readable journal running without a break for 40 years containing an estimated annual average of 100 pages.

There are no doubt other factors, one of which has been the crucial ability to renew its membership with younger recruits, so that the Group is able to change with the times.

Changing Methods of Communication

For a group like ours, methods of communication are crucial. We have developed several different channels. Perhaps the most important, and certainly the most used over the whole calendar year, is the electronic mailing list (for details on how to join, see <http://www.radstats.org.uk/jiscmail.htm>). Relevant items in the day’s news are commented on by members, and more long-term issues are raised to attract a breadth of comments. Topics raised in the first six months of 2015 included notices of meetings, publications and consultations, and discussions of a range of queries and issues. Examples include: how to do a community profile audit in the voluntary or community sector; how to measure the ‘size of an effect’ in statistical analysis; where to find a plain account of quality control in UK official statistics; the selling of a health data analytic company part owned by government; the aims and performance of ‘Q-step’ (a new programme to bring quantitative methods to undergraduate students in non-quantitative degree courses such as politics and health studies); a proposal for a new Radical Statistics book on big data; where to find statistics of healthy life expectancy.

Issues of *Radical Statistics* (originally called the ‘Newsletter’, more recently termed the ‘Journal’) always contain original articles of a length and quality more usual in academic journals; an author’s article will be peer-reviewed, if they request it. The Journal reached Number 112 in 2015. Each copy is sent to members (and subscribing libraries) in hard copy, while all issues previous to the current one are available to read on the website (<http://www.radstats.org.uk/journal/>). An impressive set of articles on a wide range of topics have been published over the years, including the winning entries in the Radical Statistics essay competition every two years.

The Annual Conference takes place each February or March, in different places across the UK: the last three have been in London, Manchester and York. The size of the UK means that most members can attend Saturday’s programme on a day trip; this facilitates continuity of participation. Friday evenings usually involve a social event, and Sunday may include a cultural event, such as a guided walk around the locale. These conferences involve the chance to reconnect with old friends and also to make new contacts. For the Programme and the Local Organising Committees,

the Conference involves the opportunity to work together on a worthwhile and enjoyable initiative.

Working groups provided valuable channels of communication in the early days, but are less important now, because they are fewer, and perhaps because of the availability of alternative channels, such as the mailing list and, increasingly, social media. Even groups that are now practically defunct, have established collegial ties and shared knowledge through previous projects, which provide a basis for ongoing communication.

As for social media, Radical Statistics has a Facebook page and a Twitter account. Information about these is given on the Group's website.

DISCUSSION: WHAT THE FUTURE MAY HOLD – SOME LARGER TRENDS

In conclusion we review some of the challenges for those involved in Radical Statistics. In spite of improvements in the UK's official statistical system referred to above, there remain large roles for developing statistical literacy, for a statistical agenda for non-government organisations, and for further improvements in the freedom of official statistics from government interference.

Changes in the Group's 'Publications'

Public products will need to continue to develop new ways of communication, dependent on the audience. Above we have given examples of RadStats publications that have been addressed to academic/professional audiences, and/or to community groups and active citizens more generally. Examples would include, in the first category, *Demystifying Social Statistics* (Irvine et al., 1979), *Statistics in Society* (Dorling & Simpson, 1998a), and *The Unofficial Guide to Official Health Statistics* (Kerrison & Macfarlane, 2000). An example of the second would be *The Nuclear Numbers Game: Understanding the statistics behind the bombs* (Radical Statistics Nuclear Disarmament Group, 1982).

An example of a publication that aimed to speak both to academic/professional audiences and citizens at large is *Reading between the Numbers: a critical guide to educational research* (Radical Statistics Education Group, 1982), addressed in part to education professionals, and also to 'anyone who is interested in education' (p. 3). The original paper edition had to be printed by the Group as hard copies, and then moved around the country to bookshops, or posted individually to those who sent a (nominal) fee. It was not easy for academic libraries to order. However, in 2012, it was scanned and put up on the Radical Statistics website for interested readers, wherever they are based, to download easily and freely.

It is likely that reviews of methods and critical guides to official statistics will continue to have a place, even if in digital more than printed form. Social media and email lists will cope with more immediate demands. Online resources are likely to increasingly link with useful experience in other countries.

New Allies and Changing Trends

At a time when it is archiving its first 40 years of papers from the past in the Wellcome Library, Radical Statistics has a future enhanced by the activity of a range of allies.

The Royal Statistical Society produces outward-looking publications and hosts web-based discussion groups – and is making available free web-based courses on Statistics for Journalists – though it would also be of interest to citizens more generally (see ‘Resources’ on the RSS-Statslife website). Other independent bodies such as Sense about Science and Full Fact offer related help and facilities. Full Fact, for example, maintained a fact-checking service to comment on politicians’ and media claims during the 2015 general election campaign.

In addition, in recent years, many official national and transnational organisations have seen the value of making available some of ‘their’ data for ordinary citizens to analyse, especially if the production of that data relies on the cooperation of the public in the first place. The UK government has set up a web site (see its website) to enable access to official statistics it produces; many other governments provide a similar service. We see this trend also in the active facilitation of access to results of international surveys produced by organisations like the Organisation for Economic Co-operation and Development (OECD) (see e.g. Evans, this volume). In recent times the Open Data Institute has established a number of ‘nodes’ around the world, in order to promote its work internationally; see the Open Data Institute website.

A less complex and more positive example is provided by ‘Constituency Explorer’, produced by Durham University and the House of Commons Library (e.g. Ridgway, Nicholson, Sutherland, & Hedger, 2015); see the Constituency Explorer website. This makes available in a very accessible way data on over 150 variables for each of the 650 parliamentary constituencies in the UK. The website allows the user to quiz themselves about key features of a chosen constituency, including voter behaviour at the 2010 election.

Big Data: Information Windfall, or Merely Hot Air?

At the time of writing, trends towards the availability of exceedingly large and continuously produced datasets have caught the imagination of a number of pundits and entrepreneurs. This sort of data, which requires ever larger storage facilities (previously unavailable or highly expensive), is produced by a range of sources: for example, monitoring devices operating continuously, such as CCTV security cameras or speed cameras; social media devices offering ample information on interpersonal networks, and attitudinal and behavioural data (‘likes’); and consumption patterns, produced by ‘loyalty cards’ for particular retailers.

Such data pose a number of challenges to which members of Radical Statistics and their allies must face up:

- Epistemological: (a) a need to reassert the traditional methodological concerns of data structure, quality, validity and bias, often played down by Big Data enthusiasts, in the belief that possessing a ‘big’ sample overrides such concerns, ignoring the fact that the sample may often be opportunistically selected (a striking example of the problem is given by the Literary Digest poll published before the 1932 US Presidential election [Marsh, 1979]); (b) the need for continuing critique of the ‘inductivist’ belief that data alone can somehow generate dependable, general theories; (c) reasserting the fact that ‘big data’ are often by-products of administrative systems and therefore both more affected by temporal changes of policy and procedure, and less revealing of social issues and tensions that current policy and procedures do not recognise.
- Political-economic: (a) challenging the monopolies of production and ownership of the facilities needed to produce ‘big data’; (b) ensuring democratic control over the resources and methods of analysis for public policy.
- Professional: (a) developing skills in using the high quality computing facilities which are clearly going to become even more important in future; (b) ensuring that the data analyst employees of big data owners gain and retain their key professional functions of quality control, independently of their employers’ particular interests.

What Radical Statistics and Similar Organisations Can Offer in Terms of Numeracy and Statistical Literacy

There is naturally distance between key corporate and government priorities for statistical work, and the statistical literacy required to make that work accessible and of use to non-government communities. Even when governments and corporations support broad purposes of statistics, the continuing need for research skills to address non-expert audiences with a variety of specific interests will ensure a future for radical statistics.

Looking to the future, Radical Statistics can offer a number of means of support to organisations – such as professional associations, community groups, or active citizens more generally – who face a barrage of numerical information that is claimed to be relevant to their work, or their daily lives. These might include providing resources, such as some of the publications produced over the years (see the RadStats website). In some cases, these resources may serve basically as models for work that might be done in other countries, or in changing circumstances. Conversely, Evans and Rappaport (1998) considered whether the ‘barefoot doctors’ practising earlier in some Asian countries might provide a model for the way statisticians could work with community groups in ‘northern’ societies.

In other cases, a group or individual might wish to address the mailing list directly; see the ‘Activity’ page on the RadStats website or information on how to join. (Though the list has subscribers in a number of countries around the world, the majority are in the UK.). The list receives one or more enquiries of this sort every



— IS THE ANALYSIS CONDUCTED AT THE RIGHT LEVEL —

Figure 3. *The level of analysis problem in social research*

week. Sometimes they lead to several responses to the query made; on occasion, one member can enter into extended communication with the activist or researcher involved. In addition, many actions in support of progressive causes are undertaken by RadStats members as individual citizens in their community or trade union. In this way, the organisation itself acts as support to the individuals in it, allowing us to do things outside RadStats that we wouldn't do otherwise.

In illustrating the possibilities, we might cite a recent case of the use of these and similar ideas in a campaign by academic colleagues in adult mathematics education (or adult numeracy), drawing on ideas from a kindred movement to Radical Statistics, namely Critical Mathematics Education (e.g. Skovsmose & Greer, 2013). This relates to a case study of informal learning in a trade union campaign for better pay and conditions of 'casually-employed' academics.

Collective learning emerged through the academics deciding to organize around shared experiences of discontent, and working with union delegates as "barefoot mathematicians", which they relate to the "barefoot statisticians" described by Evans and Rappaport (1998). The workers learned how the relevant complex pay formula worked, and documented evidence that led to a dispute, which ultimately resulted in a win for workers. Through this campaign, the casually-employed academics came to understand at first hand the relationship between "membership density" of casual academics and strength in the union. (Yasukawa & Brown, 2013, pp. 255–256)

This educative role of 'radical statisticians' contrasts with other valuable but more professionally restricted approaches such as Statistics without Borders (see above). Nevertheless, the Royal Statistical Society has recently expanded an 'outreach' programme; see RSS-StatsLife website. The BBC has an ongoing radio series 'More or less', which like *Demystifying Social Statistics* and *Statistics in Society*, aims both to clarify the use and meaning of statistics in policy debates, and also to take

a critical look at the social role of statistics in society (see also Blastland & Dilnot, 2008).

As we write in 2015, it is clear that much of the world is in a crisis of multiple dimensions. But perhaps we can take heart from historical and biographical writings from previous periods of crisis; see for example, Kingsley Martin (1969), former editor of the *New Statesman*, on the 1930s in Europe and the UK. Such accounts teach us that, whatever name we give to groups that support the development of workers' and citizens' knowledge, such groups are vital in providing support for those that need to resist the most insidious developments and acts promoted by what is now called 'the one percent', and to develop knowledge and action that support the needs of the 99 percent.

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Constituency Explorer: <http://www.constituencyexplorer.org.uk/>

Full Fact: <https://fullfact.org/>

Open Data Institute: <http://theodi.org/>

Radical Statistics Group: <http://www.radstats.org.uk/>

Royal Statistical Society: <http://www.rss.org.uk/>

RSS – StatsLife: <http://www.statslife.org.uk/resources/>

Sense about Science: <http://www.senseaboutscience.org/>

UK Government Statistics: <https://www.gov.uk/government/statistics/>

UK Statistics Authority <http://www.statisticsauthority.gov.uk/>

Wellcome Trust: <http://www.wellcome.ac.uk/>

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