Russell Ackoff

Russell Lincoln Ackoff has had a distinguished and influential career in two disciplines and (at least) 2 continents. Born in Philadelphia Pa on 12 February 1919, he is still active at then end of his 9th decade – his book *Management f-laws* (with HJ Addison and S Bibb) was published in 2007. With his mentor, colleague and friend Wes Churchman he established the path-breaking Operations Research Group at Case Institute of Technology, now Case Western Reserve. In 1957 they were joint authors (with Leonard Arnoff) of the famous textbook *Introduction to Operations Research*. In the same year he was President of the Operations Research Society of America (ORSA) - fore-runner of INFORMS - in its fledgling period.

Yet increasingly he became disenchanted with the discipline to which he had helped to give birth. He became as noted for his increasingly outspoken criticisms of the subject's narrow focus as he had formerly been for his pioneering development of it. His radical perspective on what was needed for a more socially relevant practice was received with limited sympathy by the US OR profession – but has remained hugely influential on OR elsewhere, especially in the United Kingdom, and on the systems movement world-wide.

Russ grew up in Philadelphia. His father Jack was born in Russia but migrated to the USA with his parents aged 2 around the turn of the last century; his mother, Fannie Weitz, was born in the United States. Jack was a manufacturer's sales representative, and as soon as Russ's younger sister was old enough Fannie ran his office for him. The family was badly hit during the Depression, and Russ took whatever work was available – selling razor blades door-to-door, delivering pamphlets, working in an iron mill, etc. His parents could not afford to send him to college, but borrowed money to get him started. He got a scholarship soon after enrolling, but worked nights and weekends throughout his undergraduate studies.

Ackoff was particularly influenced by his father, his maternal uncle and by his maternal grandfather (who had emigrated from Russia with Russ's grandmother around 1880), all of whom he adored. His grandfather was a butcher, with a shop near Russ's family home – Russ recalls delivering meat in a horse-drawn sleigh when it snowed, and in a Model T Ford when it didn't. His grandfather was highly intelligent and self-educated and could speak a number of languages, but he could not read or write in English. Russ retains fond memories of learning to read and write along with his grandfather and grandmother.

All of them placed a high value on learning. His mother's older brother was a successful Philadelphia architect. So it was natural that when he became a student at the University of Pennsylvania, he specialised in Architecture. But on graduation in 1941 he accepted a Teaching Fellowship in Philosophy. This was a considered decision, but its outcome was not what he anticipated. As he put it

> Doing philosophy was an opportunity to learn something new. I expected this
> to be an adjunct to my practice of architecture. But it turned out the other way.
> It turned out that the philosophy of science gave me the opportunity to design

social systems, and I was more interested in people-oriented systems than in buildings. They were both design, but different kinds of design. I like creating things.

Russ's study of the Philosophy of Science was very shortly to be interrupted by war service in the US Army, and it was not until 1946 that he returned to Penn. There he worked under the supervision of CW (Wes) Churchman; in fact Russ was his first doctoral student (Ulrich, 2004). The journey that both Ackoff and Churchman made which took them from Philosophy to Operations Research was due to the influence of the ideas of Churchman's teacher Edgar A Singer. Singer had studied at Harvard with William James, but had developed a somewhat different version of James' pragmatist philosophy. In general, pragmatism takes the stance that the meaning and value of all human endeavours, including philosophy and science, must be judged by the way they serve the practice of human life.

In 1945 Churchman, though only 32 years old, was elected Chairman of the Philosophy Department at Penn. Together, Churchman and Ackoff tried to establish within the department an Institute of Experimental Method that would take Singer's philosophical ideas forward and apply them practically to current social issues. However the Department was not persuaded, and indeed Ackoff's teaching appointment was not renewed. In 1947 Ackoff moved to Wayne (now Wayne State) University to an appointment in Philosophy and Mathematics, and Churchman followed a year later. Once again, however, the idea of a practically-oriented Institute as part of the Department of Philosophy could not be brought off. In 1951 therefore they broke with Philosophy, and moved to the Department of Engineering Administration at Case Institute of Technology (Ulrich 2004). The basis for this move was that they saw the congruence of their thinking with the incipient field of operations research.

At Case they were able to put their ideas to the test. There they established the first MS and PhD programs in Operations Research, held a series of major annual OR conferences, and began to teach short courses for industrial practitioners (Arnoff, 1957; Dean, 2004). With E. Leonard Arnoff they published *Introduction to Operations Research*, which set the developing tools and techniques of OR within an articulated framework of Singer's philosophy and of the systems approach. It was the first internationally recognised OR textbook (Churchman, Ackoff, Arnoff 1957).

Shortly afterwards Churchman left for a chair at Berkeley, and in 1964 Ackoff moved back to the University of Pennsylvania, which was to be, in one form or other, his home for the rest of his career. Before taking up his new post Ackoff held a visiting chair at the University of Birmingham, where his well-attended short courses established a rapport between him and a whole generation of UK practitioners. While there he acted as marriage broker between the UK Operational Research Society and the prestigious Tavistock Institute for Human Relations in the setting up of the Institute for Operational Research (IOR). IOR's mission was to extend the applications of OR in the public sector, but it also provided an interface between OR and the social sciences (Kirby 2003).

This was not the first (or indeed the last) significant encounter by which Ackoff influenced the direction of British OR. Still in the 1950's Pat Rivett, head of the

National Coal Board's OR group (the UK's premier practitioner unit) spent 6 months at Case. When in 1964 he became the first Professor of OR in Britain, he modelled his department at Lancaster University on the arrangements at Case. Ackoff and Rivett set up a long-lasting student exchange programme between Lancaster and Penn. Their joint book *A Manager's Guide to Operational Research* was a key text for explaining OR accessibly to potential users (Rivett and Ackoff 1963). Ackoff also became very close to the leading British operational researcher Stafford Beer.

Central to Ackoff's educational philosophy was that masters students undertook engagements with practical problems while studying. For this purpose Ackoff was extraordinarily successful in generating a wide range of contract work with major organisations – with the added advantages that both students and additional faculty positions could be supported out of the income. At Penn Ackoff therefore set up not only an academic department of Statistics and OR, but also a research centre to house the projects. In fact that last statement is a simplification, as over the years there was to be a series of departments and of research centres. Over the period from 1964 Ackoff continually redefined his view of OR; in the process he found it necessary to shed old forms, and some of the people who had been recruited to them. He himself did not believe in academic tenure, and early on deposited a signed but undated resignation letter with the Dean of the Wharton School, to be used if and when the Dean chose.

By the mid-1970s Ackoff's disquiet with what OR had become constituted a central focus of his work. Ackoff was by then operating through the Busch Center (named after the founding dynasty of the Anheuser Busch brewing corporation with which he had a long-term relationship); and the Social Systems Science (or S^3) programme. This was strikingly different in students, staff and curriculum than the, by now, standard programme heavy with mathematics and algorithms. He attracted star faculty members with strikingly diverse orientations – Hasan Osbekhan from planning, Tom Saaty who would shortly develop his Analytic Hierarchy Process, and Eric Trist from the UK, originator of the socio-technical-systems approach. It has to be said though that there was very little team orientation: each of the stars tended to operate independently and recruited their own constellations of supporters.

It was during the 1970s that Ackoff's disillusionment with the course and conduct of OR was registered publicly in ever more ringing tones. At this time there was a general malaise, often perceived and referred to as a 'crisis', in operational research world-wide. However none of the remedies offered by others in positions of influence matched Ackoff's in its root-and-branch radicalism.

To explain what has been called Ackoff's 'apostasy', we need to identify the key philosophical and practical elements that by now were underpinning Ackoff's approach. It is reasonable to say that it is these ideas, rather than his role in launching OR as an academic subject, that constitute his most lasting contribution to the discipline.

The seeds of Ackoff's disquiet can already be seen in two aspects of the 1957 text *Introduction to Operations Research*. The purpose of OR was defined there as finding 'the best decisions relative to as large a portion of a total organisation as is possible'; this definition led to the first principal characteristic of the discipline, namely its

consistency with a systems approach. The second key element was the need for a team approach based upon an eclectic choice of disciplines. Since 'most man–machine systems have physical, sociological, economic and engineering aspects. . . . (t)hese phases of the system can best be understood by those trained in the appropriate fields'.

The emphasis on the interdisciplinary approach to decision making was to be one of Ackoff's continuing concerns. By 1961, he was already registering his unease at the undue narrowness of OR models - they too often failed to incorporate 'psychological and social variables' (Ackoff 1961). He also expressed strong reservations about the trend towards 'suboptimization' and, more critically, the fact that OR models were being applied to 'problems of limited scope'. In his speech as retiring President of the recently formed Operations Research Society of America he specifically highlighted the potential for OR to contribute to raising living standards in the third world (Ackoff 1957). A continuing emphasis on specialised modelling techniques, he foresaw, could fuel a search for problems to match those techniques, rather than the 'strong problem orientation' that was needed.

A series of publications through the seventies laid the groundwork for the more overtly critical publications that emerged towards the end of the decade. In 1972 his book (with Fred Emery) *On Purposeful Systems* provided an erudite and thought-provoking account of how systems thinking can be applied to human behaviour. To the extent that a system is 'purposeful', understanding of its aims can only be gained by taking into account the mechanisms of social, cultural and psychological systems (Ackoff and Emery 1972). The following year he distinguished the problems of the 'machine age' from those of the 'systems age' which was already emerging. The introverted OR discipline, he said, was not broad enough to research effectively the key operating characteristics of our society (Ackoff 1973). In 1977, in a paper based on an address to ORSA and TIMS (The Institute of Management Sciences), he critiqued OR's focus on optimisation and objectivity, saying that this constituted a guaranteed opting out from reality (Ackoff 1977a).

Other heavy-weight papers emerged in this period: one on the social responsibility of operations research (Ackoff 1974a; see also Chesterton Goodsman Rosenhead Thunhurst 1975, Ackoff 1975, and Rosenhead and Thunhurst 1975); and one which revisited his 1957 paper on development (Ackoff 1977b). This took a very different line than his paper 20 years earlier: he now felt that only if people carried out the planning of their own future themselves (with some help from professional planners) would that planning be effective.

The definitive statement of Ackoff's separation from the main body of OR came in his 2 papers to the UK Operational Research Society's Annual Conference in 1978. These papers came respectively at the beginning and end of the Conference. Of course the several hundred attendees had not been following Ackoff's intellectual journey, so the opening paper 'The future of OR is past' (Ackoff 1979a) hit the conference like a bombshell. Ackoff had tremendous influence and respect in Britain, and the uncompromising message of the paper was deeply uncomfortable. The themes already mentioned were marshalled into a powerful polemic on the collapse of inter-disciplinarity, the limited purchase of context-free mathematical tools, and the irrelevance guaranteed by optimisation and objectivity. The result was that OR had

and would continue to move down the organisational hierarchy and be admitted only to relatively insignificant problems. Ackoff was proclaiming, in fact, the complete irrelevance of OR (in its production and distribution 'output-oriented' guise) to the resolution of society's key problems. The effect of this barrage of connected argumentation was reinforced by Ackoff's reputation, his elegant mastery of language and his skill as an orator.

The conference was buzzing with discussion about what Ackoff had said. And the British OR community continued buzzing after the conference was over. This ferment was by no means calmed by Ackoff's closing speech, in which he sketched out his philosophy for a systems-based, transdisciplinary and participatory approach which he called 'Interactive Planning', as embodied in his S^3 programme at Penn, to the redesign of businesses, organisations and management. The critique evidently resonated with delegates', perhaps partially formed, concern about the limitations of the approach and methodology that they were caught within. However Ackoff's prescription was less immediately attractive. Something more home-grown was required.

There is no question but that the impact of Ackoff's apostasy on operational research has been most significantly transmitted through the UK rather than the US OR community. Indeed when Ackoff in effect withdrew from OR in favour of an alignment with the systems movement (a move paralleled by both Churchman and Beer), US OR seemed to close ranks against him. One further trenchant broadside provocatively titled 'OR, a post-mortem' was forthcoming (Ackoff 1987) but did not elicit the positive response that occurred in Britain. It is perhaps revealing that in the 50th anniversary issue of the journal *Operations Research* the sole references to Ackoff are contained in the article by the British contributor Brian Haley. The inevitable impression, rightly or wrongly, is that Ackoff has been 'air-brushed' out of the history of American OR.

Perhaps the reason for that response was, partly, that UK operational researchers have never been as enthusiastic about mathematical optimising techniques as their transatlantic cousins. Furthermore the preceding years had seen a number of perceptive if less sharply focussed criticisms by senior UK operational researchers (eg in Presidential addresses to the OR Society) of the methods and standing of the discipline. And some of the ideas in Ackoff's publications of the previous few years had already been picked up for discussion at meetings (Kirby 2003, 1135-6). Quite independently, in response to the perceived crisis in conventional OR a number of participative methods had already been developed by UK academics and practitioners (later collected together in Rosenhead 1989).

In any event the 'Ackoff papers' as they became known produced a surge of activity. A series of meetings were organised to discuss them, and some of the papers were subsequently published (notably Tobin Rapley Teather 1980). There were some who took exception to particular aspects of Ackoff's critique – notably George Mitchell's 1980 President's Address to the OR Society, and Sam Eilon writing in his journal *Omega* (see Kirby 2003). However the emerging consensus was that the practice and especially the academic study of OR had indeed fumbled its way into a cul-de-sac, whose contours Ackoff had dramatically illuminated; but that the mode of escape was not precisely through the door marked Interactive Planning (Ackoff 1974).

Over the following 3 decades the British school of model-based participatory planning known alternatively as 'problem structuring methods' (PSMs) and as 'soft OR' has developed to the point where it is a standard part of the curriculum in UK masters courses in OR, and is among the most used OR methods in the UK civil service (Turner 2008). The Ackoff papers debate was a major milestone in this significant development. PSMs have moved beyond the 'goal-seeking' focus of the established paradigm to embrace the possibility of intervention in 'ill-structured problem situations' (Checkland 1981) – which is entirely in accordance with Ackoff's critique of conventional OR.

This profile has been concerned with Russ Ackoff's life in and influence on OR. Since his terminal break with the mainstream of operational research there has however been another highly productive 30 years of Ackoff, but this has been lived predominantly in the systems discipline and community. There is no space here to explore adequately his contribution to systems ideas and practice. However this community world-wide is a constituency where his writings, both early and late, have been enormously influential. One measure of this is the recent 4-volume set of readings on systems thinking (Midgley 2003). When 47 leading international experts in the field were asked to nominate articles for inclusion, more papers by Ackoff were proposed than by any other author.

Strictly within the OR context, how should one summarise Russ Ackoff's lasting heritage? His great gift of establishing rapport with powerful clients enabled him to direct a great number of path-breaking practical studies. He has certainly left us a range of challenging written work, which continues to resonate – and he is still writing. His writing style is both muscular and readable (paralleling his outstanding skills as a public speaker). Commonly, the approach is polemical – directed to establishing a conclusion from clear premises and definitions, rather than to a discursive examination of possible viewpoints. He likes an argument, but he expects to win. A friendly commentator notes 'the devastating critical judgements for which he has become well known' (Friend 1990).

In terms of institutionalisation of his precepts the record is patchy. Since Ackoff resigned (not retired) from the University of Pennsylvania in 1986 he has maintained an off-campus centre – INTERACT: the Institute for Interactive Management. There are no effective academic home-bases staffed by people working in his spirit – in part perhaps because, since Churchman, he has not established continuing partnerships with colleagues of comparable stature. But the phenomenon is more significant than that – for in the United States his direct influence is now hard to find in the academic OR community. While there are operations researchers who hold his work in high esteem, their numbers are small. Indeed, among younger generations of operations researchers his name is almost unknown. In effect, since his apostasy of 25 years ago, it is as if he has been written out of the official OR canon.

Elsewhere though the picture is different. The British OR community has had a close relationship with Ackoff since his sabbatical year in the United Kingdom in the early 1960s. He formed close and lasting links with the leading British operational researchers, Stafford Beer and Pat Rivett. It was no accident then that his explosive papers of 1978 were delivered in Britain. And there they were taken not just as a

criticism but also as a challenge, and an active debate ensued. His critique of traditional OR (if not his proffered solution of interactive planning) became widely accepted, and helped to generate a different participative approach to OR, now known as Problem Structuring Methods, which has developed its own dynamic.

Round the world, Ackoff's work is highly regarded, for example, among operational researchers in Sweden, and also in Denmark, where the early relationship he established with the leading 'hard' operational researcher Arne Jensen opened up a space for people to work in a more socially conscious framework. Through other key relationships he has a continuing OR presence in such countries as Mexico, Peru, India, and New Zealand – and this despite the fact that Ackoff formally severed his ties with OR (or at least its dominant tendency) thirty years ago.

It goes without saying, but should nevertheless be said, that a man of Ackoff's eminence has many honours. He holds the George E Kimball Medal of the US Operations Research Society and the Silver Medal of the UK OR Society (its highest honour). He was made a Member of the Russian Academy of Natural Sciences in 1993. And he holds honorary doctorates from the University of Lancaster (UK), Washington University, University of New Haven, the Pontifical University of Peru at Lima, the University of Lincolnshire and Humberside (UK) and Florida International University. That said, his chief honours must be as a pioneer developer of the academic study of OR, and as a fearless promoter of stringent debate about the subsequent direction of the discipline he helped to set in motion.

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