

# Letters to the Editor

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## CONSULTANTS, PROSTITUTES AND CHAUFFEURS

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There is chalk and cheese, there are prostitutes and wives, there are also in our domain consultants and consulting engineers. As someone who, starting without the aid of either capital or contracts, has run a successful consulting engineering practice in telecommunications and electronics for rising twenty-five years, I feel I must comment on the article "The consultants" in your November issue.

I have always felt that consulting must be done from the background of complete independence from commercial affiliations and any other loyalties. Independence means just that. If you are paid by someone else and/or use their property for your own purposes you have no higher status than the chauffeur who uses his master's Rolls for weddings and funerals while the latter is out of sight.

I am not the least surprised that your correspondent has found such dissatisfaction with "consultants" — highly likely I would say — but give the real chaps a break. We have had clients in all five continents. We have had large public companies in our domain — sometimes for a period of years — and they wouldn't come back if they were not satisfied, but it is true that more often than not they do not wish it to be known that they used us.

The World Bank will not underwrite any engineering project without the *imprimatur* of consulting engineers. Surely this shows the value, the competence and status of the consulting engineer.

C. A. Henn-Collins,  
Henn-Collins Associates,  
Castel,  
Guernsey.

John Dwyer is deserved of high praise for his clearly written, unbiased, frank, fearless and interesting exploration into the ways and means of independent engineering consultants, and for illuminating certain dark corners.

My own consultancy activities stem from a small family business and much of the money it makes is ploughed back into the purchase of new plant and equipment to enhance the value and quality of the work undertaken for our clients and readers of the hi-fi magazines in which our detailed review

and test reports appear. In spite of the expensive plant we are obliged to purchase and maintain from our own resources, our fees are far more modest than those of the consultants referred to in the latter part of the article; and I feel that Derek Bond in his summing-up warning means "... if they're inexpensive (not cheap) and good we'll use them..."

Like James Moir intimates, we are also experiencing the somewhat unfair competition from college-based consultants, and were very surprised to read that equipment, plant and facilities from the public pocket are, in effect, being used in competition with the consultant who relies essentially on his fees for a living. It is noteworthy that North London Polytechnic at least has blocked one-third of the flow of money from essentially college-financed personal enterprises to private pocket, but this still nevertheless presumes that two-thirds of the money goes as a cheque into the bank account or as pound notes into the pocket of the consulting lecturer, etc. What about other polytechnics and colleges — is it accepted practice for all the income so derived to go to the college official?

One might be inclined to say "so what, good luck to them", except for the startling attitude-reflecting statements, such as "... money isn't the thing that counts..." (it may not be to the chap getting a fat salary from public funds for his twenty-six-hour week when it is purely pin money, but it certainly is to the professional consultant working his hundred or more hours a week for possibly less money) and "... didn't charge nearly as much as outside consultants..." (a blatant admission of unfair competition based on public money at the expense of the professional).

Clearly, if all this is true, then the private consultant not in a position to command the use of thousands of pounds worth of equipment, plant and facilities at public cost for nothing is faced with overwhelming and singularly unfair competition. The depreciation and running costs of a small lab could well be up to £10,000 per annum. Apart from having this sort of yearly expenditure immediately available for free the college chap would appear to acquire *at least* two-thirds of the consulting fee for himself (perhaps the whole lot apart from NLP) plus his normal salary. What an incredible situation if it is really a fact!

From the article it appears as though it could be. The implication being that provided the NLP chap puts about one-third in the pool all is well. The article fails to say what happens to the pool of money — whether it is returned to the public funds or shared out at Christmas time!

Perhaps officials from colleges other than NLP who undertake such consultancies with the college's plant, facilities, etc. would care to clarify the scene, saying exactly where the client's money goes and whether any charge is made to the consultant.

I also often wonder what happens to the fees received by the technician, etc. for equipment reviews he undertakes for the hi-fi magazines using college plant, equipment and facilities, as often indicated by the review. Does he charge less for the review than could a reviewer relying upon the income to live and pocket all the fee? Does he charge the full amount and return it to the public kitty; or does he keep some for himself and return some of the college? Then there are all the other researches written up in the magazines and paid for. Who gets the fees?

Answers to questions like these are very

important to the private consultant who has to purchase and maintain his own lab and premises, pay the rates and rent, pay his own telephone bills, pay for his own heating, his own office and secretarial staff, who cannot advertise for business and cannot belong to a trade union, giving him some idea of the unfair competition he is now facing and how long he will be able to stay in business.

Gordon J. King,  
Gordon J. King (Enterprises) Ltd,  
Brixham,  
Devon.

# The consultants

## An investigation of the role of independent engineering consultants

by John Dwyer

**"Most consultants leave a trail of disaster in their wake . . . Most of the so-called household names I wouldn't let within two miles of our factory." This trenchant observation came from Raymond Cooke, managing director of KEF Electronics, who went on to say in a recent interview that he thought the name consultant was grossly misused: "Anyone with an Avo with a bent needle can set himself up as a consultant."**

His view was echoed by Derek Bond of Ferrograph, who was in no doubt about the capabilities of consultants: 'It would be disastrous in my opinion to use these guys where you're committed to a tight production schedule, because they're just not suited to it. They are generally much more aware of the trends in basics but they haven't got a clue about equipment practice.'

These comments seem particularly significant because they come from people who do employ consultants. At one time or another such diverse organisations as EMI, Plessey, Cambridge Audio, Rank, Garrard, Ferrograph, Sinclair, Marsden Hall, Strathearn Audio, Quad, Decca, Lecson, IMF, Metrosound, Audiotronics (Laskys), Technics, Sony, 3M, BASF, B&W, Capitol, Audio Devices and the BBC and IBA have used consultants, even though many of them denied that they did so. One or two firms, particularly in the hi-fi market, make such extensive use of outside contractors and advice that all they can be said to do is to market a product someone else has designed, made and put the client's name to.

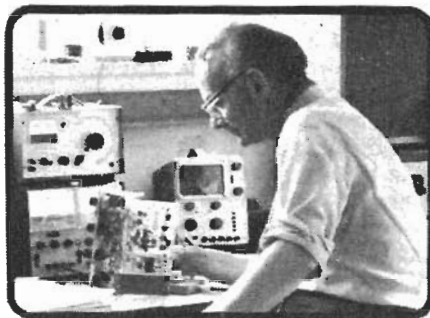
As the foregoing list shows, there is no particular type of company that uses consultants more than another, but the reasons for which they use them tend to be similar. Peter Walker of Acoustical Manufacturing said: 'If we need expertise in a particular area or we're a bit busy we take on a consultant.'

Another common use of consultants is to assess equipment about to go into production, as Grahame West of National Panasonic explained: 'The reason is that we're totally involved in what we're doing and we can't see the wood for the trees. An outside person may be able to pick out things we hadn't noticed.'

Another reason for the need for assessment is to check that imported

equipment, whether from a parent company or some other, conforms to its specifications and to British safety standards. British law is often more strict in these matters than foreign law.

The law, indeed, often provides consultants with work, perhaps the best known example being Hugh Ford's study of covert tape recordings, which was extensively publicised during the trial of the two Scotland Yard detectives who were bugged by *The Times* newspaper. James Moir, an expert in



*Well known contributor to Wireless World, Peter Baxandall.*

loudspeaker designing and assessment, noise problems in council flats, prisons, penthouses, and power stations, and electronic circuit design, was retained by Tandberg during their patent suit against Akai.

In manufacturing, free advice is plentiful but often such advice is not independent. You can't be sure a man selling i.cs is conveying the best way of doing a job, or purveying the best way of swelling his commission. You employ a technical consultant to get advice on a subject with which you are unfamiliar, for which you are not equipped or your capacity is overloaded, in the hope that the advice will be free of commercial bias. This means not only that the consultant is not financially linked with any manufacturer but that ideally any

private shareholdings he has are unconnected with his work. In another case, like that of Angus McKenzie, who has shares in EMI, Plessey and other firms, the consultant should agree to tell you what those shareholdings are. Mr McKenzie said he would be glad to tell any clients of his interests.

There are many other reasons for a consultant's need to be independent. One is that the potential client must not feel the consultant may be in competition with him. Another was advanced by Geoff Evans, founder and managing director of Warren Point: 'A supplier can only supply from what's in his brochure. An independent consultant can often find a supplier who suits what you want. The point is we can shop around.'

Warren Point have set up a company which supplies automatic test equipment, but they say they keep even that 'at arm's length.' Evans likes to think that the company has to wear two hats: 'The first is advisory, then there's the implementation hat. We're in touch with the implementation people, but not influenced by them. If you get your hands dirty you can advise, if you don't, you can't.'

Indeed, one of the major criticisms of consultants was that they tended to know a lot of theory and a lot less about the practicalities. Raymond Cooke explained his views more fully: 'A consultant soon runs to the end of his knowledge. A good example is the use of solid state devices. Those who use them on a large scale know a great deal more about these than the chap who does a "lashup" now and again . . . The specification is not enough. Most manufacturers will tell you that the running specifications are miles outside what they should be and the other parameters, the crucial ones, are not quoted, and those are the ones that let you down. Ask any manufacturer what his

greatest problem is and he will tell you the variability of devices.'

Stan Curtis of Cambridge Audio said that one consultant had produced a superb design 'but it was too good. It would have been all right if we had only wanted to produce one a month.' In future they would use consultants for specific problems rather than hand over entire projects to them.

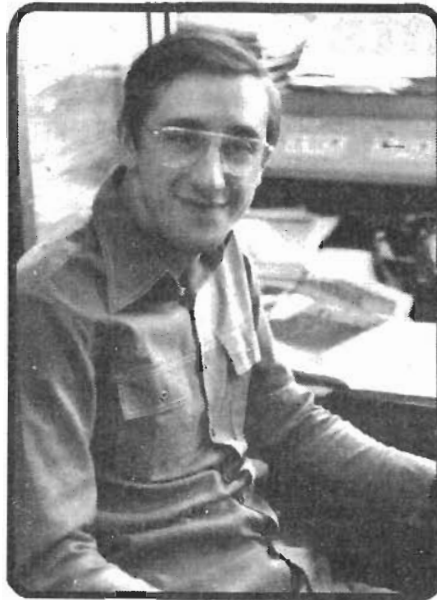
Production engineering is a specialised skill which some thought outside the ken of consultants, and one engineer remarked that the production engineer needed to be familiar with the constraints of the plant and staff, which would only be possible if the engineer were loaned to the client for a year or so, in which case the client may as well hire one himself.

Yet many firms use consultants to advise them how to fill up spare production capacity, and let them see a new product through from design to production. The company of PA Consultants have often done this, perhaps the best example being Strathearn Audio, which had no product line at all before PA arrived. The Advanced Production Technology Unit of PA will develop, research, and produce a product, recruit and train staff, build any special production machinery and even make a small production line which can then be transferred to the client's plant.

Peter Baxandall, with far less commercial test gear at his command and a preference for using easily modified home-made equipment for much of his work, had a similar view. 'There are two schools of thought on this. One is that the designer does his sums and draws a diagram and that's the end of it, and if it hums and needs a bit of screening that isn't really his concern. I never take that view. The job of the good circuit designer is to see the thing through and these practical things are part of it.' To quote from Cherry and Hooper,† 'If pen and paper design is an art, then completion of the design to the hardware stage is an art of a higher order.'

He admitted he sometimes became absorbed in the merely interesting but unremunerative. Hugh Ford agreed. 'You're always looking for perfection, but you've got to give and take. You've got to compromise because the thing has got to be made to a price. Usually what you're doing is saying "These are the areas for improvement".'

On this, one observer, who has worked in most branches of electronic engineering, said he thought it was not the consultant's job to keep his own feet on the ground. 'For instance, if the consultant says the best way to do this is to use high vacuum technology, someone has to say to him "Well we don't want to get involved in that. What are the alternatives?" And he says this, this and this and the client says "We'll



Roger Driscoll, of the North London Polytechnic.

do this because we know how to do it".' There had to be continuous communication between client and consultant.

Geoff Evans of Warren Point even stressed the value of knowing how to use the client's old plant, say an oven, in the design of the new system, if that were what the client wanted.

#### Academics in consultancy

Because he thinks many consultants haven't got their feet on the ground John Deutsch calls himself a freelance computer systems designer, and he's particularly critical of the practical ability of many of his colleagues: 'They've overlooked the problems that can occur, and this is particularly true of academics. My job in the computer industry is to make the equipment do what the user wants. For example any systems where money is concerned have to be safe. There has to be a deliberate rigidity built into the system so that it's not easy to access once you've put the information in.'

His feeling about academics is widespread, and one commentator remarked about their 'Ivory Tower' approach. Roger Driscoll, lecturer at the North London Polytechnic, dismissed the charge: 'On the contrary the very fact that we have this close association with the press and with industry keeps us in touch.' Some might be churlish enough to argue that close association with industry is not the same as being in industry, but if one accepts that the academic community has a great deal to offer industry, there are still other sources of resentment against the academics. One that gives a great deal of contemptuous amusement is the perpetual paper chase through Milton's 'grove of Academe,' the ceaseless agglomeration of honorifics to add to the notepaper, a sense that scientific knowledge is of less importance than the acknowledgement of other scien-

tists. Another reason for the resentment is even older.

It was perhaps best expressed by James Moir, a man who is obviously successful, drives a powder green Jaguar and owns a slice of Hertfordshire that extends, as he puts it, 'as far as you can see'. Yet he feels threatened by competition from the denizens of university departments that are equipped with public money. 'They're all at this,' he said. 'It even goes down to the technical colleges where the physics master has set himself up as an acoustic consultant. And not just acoustics, they're doing all kinds of other things as well.' The apogee of sheer cheek must have been reached in one individual who attended a symposium Moir gave some years ago. 'He took away the notes we handed out and said to himself "This looks like a good thing", and the next thing I saw was that he was advertising himself as an independent consultant.'

How did Roger Driscoll of the North London Polytechnic justify this use of public resources, presumably to fill his own pocket: 'The money isn't the thing that counts. My consultancy work helps the college because it is good for the recruitment of interested students. Our connections with the press and with local industry helps the students to become known in industry and make it easier to place graduate students when the time comes for them to leave college.'

He acknowledged that he was using publicly owned equipment but said that he didn't charge nearly as much as outside consultants. 'I estimate that my income from consultancy could be counted in hundreds of pounds before tax.' Until recently all consultancy fees at the N.L.P. used to go into various pockets but now a pool has been started into which the lecturers pay part of the fees they receive. 'It varies. It's usually about a third.'

About one in six of the lecturers at the N.L.P. did consultancy work, mostly because they were not in disciplines where such work was appropriate. Driscoll emphasised that the amount of free time lecturers had was exaggerated: 'The amount of time actually spent in the lecture room may seem small, possibly only five or six hours a week, but a considerable amount more, maybe 15 or 20 hours a week, is spent in preparation for lectures.'

Many of the reasons for or against using consultants are paradoxical. For instance, their non-involvement in manufacturing gives them independence, but that non-involvement may reduce their ability to help.

Cambridge Consultants used to be involved in manufacturing, and it was a none too happy experience. They set up three companies not long after the firm was founded in 1960, one of which was Cambridge Audio, now no longer linked with them. The consultancy service did well but the manufacturing interests

†Amplifying Devices and Low Pass Amplifier Design by E. M. Cherry and D. E. Hooper, Wiley, 1968.

four, lured and dragged Cambridge Consultants down with them. The bankruptcy may still be having its effects.

Peter Baxandall: 'The consultant is dependent on being successful, because if he makes a mess of it it will get around. So he has to be careful not to take on the wrong job, either because it's too large or too difficult or it's likely to have an unsatisfactory outcome. He has to have a knowledge of the firm he's dealing with.'

#### Paying a consultant to learn

Another paradox of using a consultant is that the client, having called him in, has to brief him extensively, not just on one particular problem perhaps, but on the client's entire process, of which the consultant may have no previous knowledge. Thus the client is paying the consultant to gain knowledge and experience that may one day benefit the client's competitors.

Dr Robin Smith-Saville of Cambridge Consultants did not think this was a problem. 'First of all if you're working for the government they don't mind your learning at their expense. Secondly if a company is working with a product that is going to give them a good market they don't mind putting cash into it.' Bob Stuart of Boothroyd Stuart said they didn't charge clients for learning time. Others said that not knowing the process would be part of the objectivity the client was paying for. Many gained clients because of their experience of other manufacturers in the same business; many firms take on a consultant because they want to know what their competitors are doing. This particularly applies in consumer electronics, where many consultants may do a great deal of equipment reviewing for magazines.

Technical reviews for magazines are a fruitful source of revenue for consultants. This is not because the magazines pay well, as any consultant, particularly one who doesn't seem to need the money, will tell you, but because signed articles attract business. The consultants I spoke to did not advertise directly, though only one of them, Moir, indicated that he was aware of any restriction on doing so. 'Most professional people are prevented from advertising,' he said.

A spokesman for the I.E.E. admitted that their restrictions were largely imitative of the legal and medical professions. Rules 9 and 14 state: 'A member shall not, in self-laudatory language or in any manner derogatory to the dignity of the profession of electrical engineers, advertise or write articles for publication, nor shall he authorise any such advertisement or article to be written or published by any person.' An explanatory paragraph later explains that the stress is on the word 'self-laudatory,' and the engineer must not suggest he is more competent than other engineers. He is not allowed, as a consultant, to 'improperly solicit' work.

Most of the consultants I spoke to said their work came either from personal recommendation or from people with whom they had worked before.

The relationship with the press introduces the extent to which the activities of consultants are secret. A difficulty here is that for a consultant to carry on his business successfully he must tell potential clients what he has worked on in the past and, if he over conscientious, this may put him in a difficulty. In practice this does not seem to present too much of a problem.

The most secretive consultant organisation perhaps, is PA, which started as Personnel Administration in 1943 when it was advising on Spitfire production. They now claim to be the largest consultancy in the world, with a world-wide staff of 2,000 and a staff of 100, many of them Ph.Ds, at their new research centre in the Hertfordshire countryside. To begin with they have taken elaborate precautions to make sure the firm is not taken over and its secrets plundered thereby. In the mid-fifties they made PA a profit making trust, which is now administered by 'three or four people of sound reputation' in the city and elsewhere. Unlike other consultants, who did not regard working at some future date for a present client's competitor a problem, PA undertake never to work for a competitor.



Angus McKenzie in his laboratory.

Potential recruits to PA, 90 per cent of whose consultants have degrees or a professional qualification, have to undertake not to leave to work for a client, and not only do PA give the usual undertaking not to disclose for whom they are working, but they bind the client contractually from telling anyone that they have PA working for them.

However, other parts of the PA organisation may be working for competitors and so some PA staff are not allowed into the PATS Centre International Laboratories in Hertfordshire. PA have made confidentiality a special part of their service. 'Our secrecy,' said Gordon Edge, 'is an added recommendation.'

One can see why clients should keep their use of consultants quiet, before a product goes on the market. What seems more strange is that the use of a consultant should be kept secret after that, particularly in electronic consumer products. Many firms insisted they did not use consultants even

though incontrovertable evidence existed that they did.

Angus McKenzie offered a simple but appealing explanation: 'They feel their prestige will be much lower if the public is told that (the company) had to go outside their big empire. They like to think they've got all the best brains in the country under one roof.'

One would have thought the public might be impressed by the resourcefulness of a company that used consultants. Graham West, of Technics, said: 'I think it's just pride. I think it's a mistake because it must be of benefit to them to let the consumer know they've taken a lot of trouble to make sure the product is correct.' Many suggested, however, that idea was much too complicated. Alan Hall-Williams, of Strathearn, said: 'Talking about whether or not a company uses consultants may cloud the issue.' The public didn't care as long as the product worked properly.

Gordon Edge thought the companies had better reasons: 'It's not pride. This is silly because the modern sophisticated company treats the consultant as one of the tools he has available to help him do the job. Firms don't rely on us to do all the R & D by any means and they buy the tools they need, use them and then turn the tool off.'

Sony UK's marketing manager said that Sony had never used consultants but thought the reason that other firms might want to conceal their own use of them was that 'maybe they don't want to lose the consultant to another manufacturer, or that he may sell a similar design to another manufacturer. That's the only danger I think.'

Perhaps some are afraid, like the sign writer who makes all the newsagents within five miles look as if they're under the same ownership, the use of a specialist consultant will produce uniformity. This might be true if the same consultant were asked to design similar products for competing manufacturers at the same time. As Hugh Ford said, this rarely happens: 'Ideas change, new products come on the market, new transistors, new i.c.s become available so that's not a problem. It depends on the period of time that elapses between working for a client and his competitor. If there is a problem you can phone up the previous people you did the work for and say "Look, I've been asked to do this." Usually they don't mind but if they do, you tell the customer "I'm sorry I can't do it. I suggest you contact X".'

Peter Baxandall commented that he tried to avoid working for directly competing firms, and had, for instance, only accepted one audio amplifier design commission. In many cases there is no conflict because an amplifier costing £150 is a very different product from one that costs £50.

Many firms commented that a consultant would not appreciate their design philosophy as well as their own

staff. Hugh Ford reported: 'In fact, I think this is a strong case for getting a consultant. Firms get dyed in their ways and they ought to bring somebody in to examine the end product. Manufacturers don't do this enough, and you'd be amazed at the awful clangers that have been dropped by even well known firms.' Bob Stuart also thought the complaint groundless: 'If a company is bringing in a consultant they must be wanting to change their image anyway.'

Although the consultant has no loyalty to the firm other than the fee, in Bob Stuart's words 'You want clients to come back to you.' Indeed he said he regarded this as a measure of a consultant's success. In each case research staff are not obliged to stay with companies forever, and consultants may provide better continuity than one's own staff.

In this connection Geoff Evans saw a problem for the client who went to a large-system house for a one-off system. 'They are basically production companies and they are prototype oriented. Their engineers are there to fill spare production capacity, so that the one-off job is given to the young graduates, with obvious results. They have a high staff turnover because the lad gets so far into the job, panics, leaves and usually leaves no documentation behind him when he goes.' The customer will get this equipment in the end, said Evans — probably one of the reasons he went to a large system house was that he knew it wouldn't go broke — but it will often be late, 'and usually if a firm can put up with late delivery it means that either they've ordered the thing at the wrong time or they don't need it at all. Most of his own staff, he said, had been at Warren Point for seven years.

One view often expressed was that having one's own staff on the premises was much more convenient than calling out a consultant when a problem occurred. This indeed, was the basis of Derek Bond's remark at the beginning of this article. On the other hand, in a recent article in the journal *Communications International*, Dr Robin Smith-Saville of Cambridge Consultants made the following point about consultants: 'In communications it would be rash to claim that they can do anything which is beyond the capabilities of the rest of the industry but they have outstanding skills in special areas. These skills coupled with their independence and accessibility give them their special role in the industry.' In what way accessible? 'I meant accessible as opposed to a specialist engineer in Marconi or one of the other large firms', he said. Often such an engineer couldn't be found when he was wanted.

One design manager, who wished to remain anonymous, said hiring a consultant was much more convenient than going through the business of advertising for staff, interviewing and waiting for the successful candidate to



*Jonathan Pope, a consultant at PATS Centre.*

work out his notice. In addition the R & D engineer needs to be kept fully occupied and has to be backed up with a great deal of expensive equipment in addition to the non-productive space he takes up.

Mike East, public relations adviser to Warren Point, said, 'In the present economic situation using consultants becomes more important not less. It's a shelter for many firms because they pay a fixed fee, there are no overheads and so they cost for it.'

As regards fees, there are various methods of computation. Boothroyd Stuart work on a flat fee plus a royalty. 'This gives us an incentive to ensure success, and it limits the client's costs at the beginning, the very time when he needs the money.' Roger Driscoll saw a snag: 'With a royalty payment you could become identified with the company.' On the other hand, many manufacturers do as Marsden Hall do, paying consultants on an annual retainer with an additional fee for specific projects. This too would identify the consultant with the company.

For £100 a day the client may buy the services of the large group consultancies. Individual consultants normally charge a great deal less, £50 a day upwards, although Angus McKenzie charges £100, he told me, which does seem just a little high. A university or college lecturer using borrowed equipment may charge £30 or £40 a day; one suggestion is that whatever they charge, and it could be raised to the usual rate, the money should be returned to the education service and the work counted as part of the duties for which the lecturers are already well paid, a productive means of lengthening that 26-hour week.

Whoever the consultant is, Derek Bond warns: 'Unless they pull their socks up and get a bit more production oriented we won't be using consultants much in future. If they're cheap we'll use them, but if they're not, we won't.'

I can safely assume that we are giving good value for the fees we have to charge. KEF experience cannot be typical.

James Moir  
James Moir & Associates,  
Chipperfield,  
Herts.

We found John Dwyer's report on consultants in the November issue to be very fair and objective and were surprised at the response of Mr Faulkner in December Letters.

Unfortunately the rate of progress is such that £10,000 does not buy much equipment. To equip just one of our test benches with: Sound Technology analyzer; Crown IMA analyzer; H-P function generator; H-P a.c. millivoltmeter; H-P oscilloscope; 1% precision loads; and a couple of AVOs sets us back around £4,500. When you start to add up the equipment needed in an R&D lab the figure really starts to climb. And that's just for amplifiers, before we consider f.m. tuners where the real money is.

We have come across consultants who do have their role in evaluating equipment for those (importers?) who do not possess laboratory facilities, but we do not feel they have proved themselves in the field of original product design. We employ a team of development engineers and production engineers in very close contact with our production staff, and despite this we have made mistakes in putting a product into production. Many competent engineers can design a good amplifier, but can they guarantee an outstanding performance on every unit when:

1. Batches of components come from a variety of suppliers with characteristics across the full band of their tolerances.
2. Equipment is made up by different girls with varying degrees of ability.
3. Equipment has to be tested by test engineers lacking the skills and abilities of their R&D counterparts?

When things do go wrong at the production stage it is prohibitively expensive to have a consultant virtually living on site to solve the daily problems.

Consultants do have a role to fulfil as long as they don't get carried away and set themselves up as demigods.

Stan Curtis,  
Cambridge Audio,  
Huntingdon.

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## "THE CONSULTANTS"

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I must congratulate Mr Dwyer on his review of the activities of consultants (November issue), though Raymond Cooke gave us all a devastating introductory blow. He must have met one of the many people who become acoustical consultants by buying a cheap sound level meter and a text book, having spent their previous twenty years repairing air compressors. There are a lot of these around.

Consultants are a private enterprise and they can only continue in practice as long as they are found to be worth their fees. We are clearly successful in this for we currently have over fifty active commissions ranging from the laboratory measurement of the impact insulation of a sample floor covering, through the design of a loudspeaker system to reproduce the level and spatial characteristics of truck noise, to the acoustic design of a quiet steam power station costing around £300 million. Business has never been so active.

The consultant provides the specialist expertise that is required when people meet a problem well outside their own experience. KEF do not need any advice on how to design loudspeakers but I am sure that if Raymond Cooke needed a spectrographic analysis of a loudspeaker magnet material he would find a consultant with the necessary equipment and specialist expertise in that field. He would never consider the alternative solution, spending £35,000 on the equipment and hiring a man to operate it at a salary of £4,000 a year, and then use the equipment and expertise two or three times a year.

Our clients include one of the big four car manufacturers, several other consulting engineers, some government departments and a large number of very well known architectural practices. They continue to bring their electro-acoustical problems to us, many of them having been with us for fifteen years, so

needs stating. However, my comment, which he paraphrased as "if you're working for the government they don't mind your learning at their expense" was made to emphasise a particular point. This was that a different type of learning is involved when a client, which may often be a government agency, retains a consultant to carry out a specific type of work for him, involving the breaking of new ground. Examples include the development of a new technology or provision of an independent assessment of an existing technology unbiased by any preconceptions. In such cases familiarisation with the technology and so development of the consultant — learning — are inevitable consequences of the work which the client is sponsoring. He himself is well aware of this and happy that it should be so.

John Dwyer also implies that the receivership (not bankruptcy) of the group to which Cambridge Consultants belonged may still be having its effect: this anxiety could be quickly dispelled by considering our financial and technical success since that time. However, a consequence of that experience has been to make us at CCL crucially aware of the essential need for really solid product development and production engineering if a product is to be successful in the market. This is a very important lesson which we have not forgotten and I regret that John Dwyer seems to have done so by mislaying the essential point of my comment on that topic!

My comment he quoted on the section reproduced from my article in *Communications International* (referring to the accessibility of consultants) was that specialist skills which a client may need may often exist within the large corporations, such as Marconi. However, these skills often cannot be tapped from outside the organisation. They may not even be available to other members of the corporation, because of competing demands for the time of the specialists involved. In such cases, consultants with the appropriate skills can provide a source of the necessary know-how which is accessible to all.

I fear that the very comprehensiveness of the article, covering the range of companies, establishments and styles which it did, will not have given a possible user of consultants much guidance or help in deciding whether a consultant might be of help to him personally, and if so whom to select.

My own views on this are that use of a consultant can be indicated if the development is short term, if internal development effort or appropriate skills are not available, or if long term commitments resulting from the recruitment of new permanent staff are unacceptable.

The question of whom to select to undertake the work is more difficult. Clearly, in addition to personal competence to carry out the work, a consul-

tant should also have adequate equipment and resources to ensure that time is not wasted as a result of a half-baked approach. But in addition, and equally important, he should have a clear and detailed perception of the client's needs and proven ability to deliver results efficiently. This requires much experience of managing development programmes. This is a difficult and absolutely essential art and did not receive, in my view, nearly enough exposure in an article which paid attention to so many other aspects. It is management ability which really distinguishes and singles out the competent contract research and development activity and failures in this same area which have given rise to perhaps the most cogent criticisms of consultants quoted in John Dwyer's article. Effective management and control of projects is of equal importance to technical competence and this fact can hardly be over-emphasised.

R. J. Smith-Saville,  
Cambridge Consultants Ltd,  
Cambridge.

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## "THE CONSULTANTS"

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It is clear from John Dwyer's very comprehensive article on consultants that he invested a considerable amount of time in research and discussions with individuals in the industry. Unfortunately, the very range of his discussions seems to have led to some quoted comments being abbreviated to the point where a degree of distortion has resulted. Since one of the things which emerges strongly from his article is the controversy surrounding the role and relevance of consultants, it is important to make sure that the complex issues involved are not muddled by incorrect attributions (November issue).

Mr Dwyer devoted considerable space to the very important question of whether learning by the consultant is carried out at the client's expense or his own. How you tackle this question depends partly upon what is included as "learning". In routine situations a consultant should be fully briefed already. If he is not, he should most certainly acquire the necessary skill and background in his own time and not at the client's expense. This point hardly

# Letters to the Editor

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## THE CONSULTANTS

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As one of those interviewed last year by John Dwyer, I have read and followed with interest his article "The Consultants" published in the November 1975 issue, and the correspondence resulting from it. By and large, I found it a fairly well balanced commentary though, perhaps rightly, a little pointed. Not every conclusion he draws is accurate, and since others of your correspondents seem to have misinterpreted my views, perhaps I may be allowed to clarify them.

First of all, I know of no conscientious professional who is also a "26 hour a week" man. This time, as John Dwyer correctly quoted, is easily spent in the preparation and presentation of lecture and tutorial classes, but undergraduate students of engineering are not trained simply with a stick of chalk. Additional to this is the time necessarily spent on the development of a programme of laboratory experiments, projects and research, their supervision, examination and coursework assessment, the organisation and revision of these and other, new courses of conferences, my own registered research and participation in the Polytechnic's Faculty committees, in forming its long term academic plans. Those not qualified to teach might be forgiven for overlooking many of our responsibilities, but I hope they will at least take note of them.

I would have thought that James Moir and those of his calibre need have no fear of a little competition, whilst others have allowed this age-old reason for resentment to colour their judgment. Thus Gordon King (his letter, April 1976 issue) seems to think that an academically-based professional should not be paid for the work he does on commercial development or sponsored research projects. If that were the case, then some of the criticisms levelled at consultants in these columns recently, might eventually become more justified.

The same lack of judgment is evident in Mr King's interpretation of my comments about consultancy fees; it is because I do not wish the profit motive to dominate my work, as it must not, that I do not request high fees. There are other reasons why I want to see the excellent facilities in the PNL Acoustics Laboratory maintained and developed, which I thought were made clear in the article; not firstly to serve the hi-fi press, but to serve the best interests of my undergraduates. My consultancy work has assisted greatly in this; and it has created good will with certain sections of the engineering

industry, and it has benefitted our laboratory facility. Recently, as a result of some such work, an instrument worth ten times the fee we received, was donated, at my request, to the Acoustics Laboratory at PNL. Private consultants are not unique in having professional integrity and responsibility.

Finally, I would like to echo the major point made by C. A. Henn-Collins (also April 1976 issue) about the crucial importance of the consultant's impartiality, especially when he must earn a living from both company development and consumer review work. Obviously, the two undertakings have contrasting purposes, one for the manufacturer, the other for the user, and must always be viewed accordingly. My position as an academically based consultant affords me the privilege of being able freely to observe this distinction.

Roger C. Driscoll,

The Polytechnic of North London.



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## THE CONSULTANTS

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As one of the consultants included in John Dwyer's article "The Consultants" in the November 1975 edition of *Wireless World*, I have of course been following the subsequent comment with some interest. Whilst I have been tempted to comment upon the original article and the subsequent correspondence before, Roger Driscoll's letter in June 1976 cannot be left to pass without reply.

In my opinion there are three classes of consultants. There are the variety described by Raymond Cooke, who own "an AVO with a bent needle". There are a few of us who like myself have considerable experience in industry, and have then "gone it alone" and set up their own laboratory facilities. Thirdly there are those like Roger Driscoll who are professional academics, but do some spare time consulting work.

Clearly these three classes of consultants work in very different circumstances - just what has each class to offer? The "AVO with the bent needle" type is clearly to be avoided, but what about the others? The academic type is probably appropriate where a theoretical problem alone is involved, but just how can someone who spends his life in an academic world have experience in practical designs; that is, unless he learns at his clients' expense? I have no

disagreement with academic institutions undertaking research projects on behalf of industry on a profit making basis, but individuals making free use of instrumentation and facilities which are public property, for their own benefit is a different issue. Any reasonable laboratory will have at least £50,000 of equipment. If we look at the cost of employing this amount of capital it is at least £5,000 per annum, to which we must add the cost of replacements which allowing for inflation is at least £10,000 per annum and also add overheads at say a minimum of £2,000 per annum. This shows that in the order of £17,000 per annum is involved in purely maintaining a good laboratory - why shouldn't some of this be recovered when academic staff use the laboratory for their personal gain? After all it's the public who own the equipment.

This of course leads to the question of fees. John Dwyer suggested that £100 per day was too high a fee. Well, £17,000 per annum operating cost is about £350 per week which does not leave a £100 per day consultant all that rich!

Hugh Ford,  
Sunbury-on-Thames,  
Middx.