Designers in Action: An evaluation of the impact of the Design Museum workshop series

Abstract

Consistently over the last five years, Ofsted reports on schools' performance in design and technology have drawn attention to the weakness of teaching the processes of designing. The criticism is that this process is unimaginative, unduly regimented (being both linear and mechanistic), and unnecessarily embroidered (prettied-up) with irrelevant graphic embellishment simply to influence examiners. There is an extensive and ever expanding literature providing ample testament to this problem and it is regularly highlighted as an issue in annual design and technology Ofsted reports.

> 'many still spend too much time on superfluous decoration of their design folders rather than on real design development.' (Ofsted 2002/a)

The Design Museum decided to tackle this problem by initiating a series of 'Designers in Action' workshops for teachers. In these workshops, practising designers demonstrated their approaches to designing and explored with teachers how these approaches might beneficially be developed in the classroom.

We (TERU at Goldsmiths) were asked to evaluate the impact and effectiveness of this series of workshops on the participating teachers. This paper summarises the major issues arising from the evaluation.

Methodology

We examined the workshops from the standpoint of the teachers, the designers and the Design Museum staff themselves, and as a result we gathered data through:

- teacher questionnaires to be completed pre and post the workshop sessions

- field notes from observation of the workshop sessions

- structured interviews with a sample of the teachers, the designers and with the Design Museum personnel involved.

For details of the data gathering approaches and the analysis methods adopted, please contact the authors.

Findings and issues arising

These findings are presented in two parts, first from the perspective of the 'providers' (Design Museum staff and the designers), and second from the perspective of the 'receivers', the teachers.

Findings from the providers

These findings are drawn from the interviews with DM staff and with the designers responsible for running the workshop, and from field-notes taken during the workshop sessions. We have structured the findings into three parts.

i) Illuminating the 'problem'

The DM staff were both experienced design and technology teachers and familiar with the practice of design and technology in schools. The designers were not directly familiar with design and technology teaching in schools, but were familiar with working in collaboration with design programmes in higher education. Furthermore, there were pre-existing links to schools; in one case through the experience of running teacher workshops for the Design Council 'Design in Education Week', and in the other case through their education office producing support materials for use in schools.

The designers' impression of design teaching in schools (gleaned partly from this prior experience and partly from the interaction with teachers on the day) is that it is driven by very different priorities, and using very different practices to those that operate in industry. In particular they draw out the following points:

- it is not sufficiently 'real' i.e. tasks are not based on real clients with real problems

- it is not sufficiently questioning i.e. briefs are there to be challenged and stretched, not just accepted

- it is not sufficiently experimental i.e. it remains on paper for too long, and then suddenly jumps to a final product.

This latter point is perhaps the clearest single finding from all sources of data. The designers both assert the importance of modelling and prototyping – in many different forms. From very early on in the process they use all kinds of modelling to test out and enrich their emerging ideas; card models, breadboard models, foam models, fabric models, system models; behaviour models, CAD models. They recognise the importance of initial (graphic) visualisation but in the case of both designers interviewed, they asserted that it is creative modelling activities that are central to their success as designers, since the models allow them to test out, refine, and stretch the initial ideas.

> 'We try to inspire a more experimental hand-on approach – testing – curiosity – adventure – making things work – then making them work better. The teachers say they have to have beautifully made final pieces – even if they are not well designed. That seems daft. We would value more the prototypes and the thinking behind them. Manufacturing is something different' (designer D)

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This is an iterative process of modelling, testing, refining and re-modelling. The designers saw rapid-prototyping as being at the heart of their design development. The view was strongly held by DM staff that this was not normal practice in schools.

We explored why these very different models of practice existed, and most attention was focused on the assessment process. The designers had the clear impression that moving towards this more experimental model of designing was seen by teachers as 'risky'. The process of designing that is expected in schools is specified in a particular form in syllabuses (especially for GCSE) and teachers have customised their teaching accordingly. There is clearly a risk when this tried and tested process is dramatically changed. Would the examiners give due credit to designing in model form? Would student grades be at risk? Would the department's A-C grade percentage be damaged? The designers had the clear impression that teachers were not sure that this approach was 'allowed'.

ii) The approach adopted
The workshop sessions emerged through the collaboration of the designers with DM staff. The focus in each case was on understanding users, on questioning, on idea generation, and on rapid prototyping. These were the areas that DM staff felt had the greatest priority, and where the designers had special skills and could introduce particular techniques that (it was felt) might prove transferable into the classroom.

In each case, the day was based on a series of 'hands-on' activities. As an example, one designer focused attention on 'users' through picture-profiles compiled from pictures taken (every hour of the day) by an unknown 'user'. Just by looking at the photographs (which did not show the user) the teachers had to try to build up an image of the user simply from the things illustrated in the picture-profile. Who is the user? What do they value? How do they live their lives? What objects do they like? Whose life is this?

> 'Our special interest is in user-centred design. School projects seem removed from real clients. They are not grounded in reality. We taught them about human-centred design, with an empathetic project based on a disposable camera' (designer I)

The activity then moved on to the challenge of 'can you design something for this user'?

> 'Then we taught them prototyping techniques – simple ones – from board to plastic – and more tricky ones like behaviour prototyping' (designer I)

The other designer gave them an existing product with a range of associated adaptions.

> 'We got them to come up with a new adaption. We started them brainstorming and then (pretty quickly) into modelling – especially with card. They made up lots of different card model adaptions... just using the glue gun.' (designer D)

The activities were originated by the designers and mediated by the DM staff, which gave confidence to the designers that the tasks were appropriate to teachers. In both cases, however, the activities were variants on existing ones used for previous workshops; in one case 'clients-workshops' and in the other case a special workshop developed as part of the Design Council's Design in Education Week. Whilst the teachers were expected to engage in the activities as designers, there was also the explicit expectation that these activities could be transplanted into the classroom and used by the teachers to enhance the design skills of their students.

iii) The perception of how it 'worked'
The designers felt that the response of the teachers was not only one of energetic enthusiasm, but also that the activities were transferable into the classroom.

> 'I think they were a bit shocked by some of it – but it's usable in schools.' (designer I)

> 'Yes – they said so – though there was some comment about the hot glue gun. It is also a bit chaotic and messy and seemingly uncontrolled. But it's very creative.' (designer D)

The DM staff were also confident that the outcome was as they had hoped.

> 'Very positive. Different responses to some extent on group dynamics. We feel personally elated as the workshops seem to really engage people. Everyone seemed happy to get stuck in and have a go.' (DM staff)

The greatest area of apprehension concerned the extent to which these approaches would result in work that was acceptable to the examination boards.

> 'The main risk they were concerned about was risking A-C grades by doing something that they were not sure was allowed by the GCSE boards.' (designer D)

> 'There is a strict curriculum in their schools – followed closely – with checklists of things to be done. They felt constricted by it. They need to get some fresh air into it. Definitely we think it would enliven classrooms and inspire a bit

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more creativity and imagination in kids designing' (designer I)

The perception of the providers was clearly that these days had worked, and had worked at two levels. First, they had engaged the teachers, encouraging them to operate creatively for themselves as designers in the workshop environment. Second, it had worked to encourage the teachers to think about bringing the practice of leading-edge design industry into the realm of schools and classrooms.

We turn now to the data from teachers. What do they say about the day? How valuable was it to them?

Findings from the teachers
i) The starting point of the teachers
At the start of the day, 61% of teachers rated their confidence in developing creative responses in students as 'high' or 'very high'. None rated themselves as 'poor'. However, when we asked teachers to identify their strengths and weaknesses in relation to this, there emerged two broad areas of weaknesses and uncertainty underlying this stated confidence. Specifically, teachers lacked knowledge of the design industry, and they were uncertain about how to develop design skills and inspiration.

'Little knowledge of industry.' (weakness) T. No. D/1/1

'Coming up with original/inspiring ideas.' (weakness) T. No. E/7/1

Teachers were then asked to prioritise their values for design and technology education (from a list we supplied in the questionnaire). Their ranking was as follows:

1   communicate ideas
2   work creatively
3   visualise objects/ideas
4   have ideas
5   make things
6   develop research skills
7   be practical
8   understand needs/clients
9   plan carefully
10 think laterally
11 be innovative
12 present work professionally
13 work in teams
14 follow instructions
15 consider industry.

The low priority given to aspects that relate to the industry focus of the workshops (considering industry, teamwork, presenting work professionally) is revealing here, and we believe it reflects the low priority it takes currently in their practice. When asked about the 'essential outcomes' for the day, the

teachers were very clear that they wanted to develop a richer 'understanding of the design industry' and also to learn techniques for 'developing creative responses' in students.

These dominant concerns were elaborated through their stated 'desired' outcomes for the day; specifically to have classroom resources and classroom implementation ideas to take away at the end of the day.

'Information/resources to take back to school.' T. No. A/2/1

'Teaching materials/information to help develop good lessons relating to current design manufacturing.' T. No. C/3/1

'Resource pack for KS4.' T.No. D/4/1

'Transferring the skills gained for use within the classroom.' T. No. E/4/1

ii) Achieving the objectives of the day
From each of the sessions observed, teachers commented enthusiastically on the clarity and value of the day: from the 'A' workshop 'clear progression through ideas' (T. No. A1/1); from the 'D' workshop 'Clear overview at the beginning' (T.No. C/6/1); from the 'S' workshop 'The agenda was well laid out' (T.No.D/5/2) and from the 'I' workshop 'Aims were well covered' (T.No. E/5/1).

The particular things valued by teachers were having presenters who 'knew what they were talking about'; the emphasis on 'hands-on' learning; the range of modelling techniques; the pace, the enthusiastic and stimulating nature of the day; and the way the teachers felt more able to deal with both creativity and the design industry in the classroom.

'Creativity is quite difficult to teach, today's presentation has helped make this more easily delivered in school.' T. No. E/5/1

iii) Bridging the industry/education gap
The extent to which the workshop addressed the industry/education gap received very strong commendation, with 71% of teachers feeling this had been handled 'very well'. Teachers valued the fact that they were interacting with professional designers, commenting that this provided high quality information and a sense of realism. They also commented on how positively the designers engaged with the situation.

'A fascinating insight into how Paul Smith works. I was very impressed by how willing the designers were to discuss the business.' T.No. D/7/1

'Listening to someone on the shop floor who could answer so many questions.' T. No. D/11/1

iv) Linking back to the school curriculum

There is less clarity about the extent to which the workshops provided teachers with skills, resources and understandings to take back into schools.

For some, the workshops had clearly been very successful.

'Showing how real designers do things and realising we could easily take the same approach at school.' T. No. C/6/1

'Could definitely be done in a class of pupils.' T. No. C/6/1

Very good. Useful work for us within the class in all areas, Key Stages 3/4 and A' Level.' T.No. E/4/1

'Short focused tasks were relevant to classroom activities.' T. No. D/11/1

'Examples used are easily adapted to classroom situation.' T. No. E/6/1

But others saw this aspect of the workshops as less successful.

'Needed more application of how in school and where to place it.' T. No. D/9/1

'Would have been useful to have more practical examples, to take back into the classroom.' T. No. E/7/1

'Lack of 'physical' take homes i.e. handouts.' T. No. A/1/1

v) Differences between Key Stages 3/4 and the 6th form

While this difference of opinion may partly be due to individuals' levels of confidence, there are indications that teachers found it more possible to apply what they had done in the workshops to 6th form work 'with older students' than to work in Key Stage 3 and Key Stage 4. This came out in two ways.

First, a teacher who stated explicitly that it wouldn't work for her at Key Stages 3/4.

'As an art and design/textiles teacher up to age 16, I cannot get into the real nitty gritty of the fashion industry.' T. No. D/7/1

But second, the comments from several teachers about the applicability of the workshops to activities in the 6th form with AS and A2 programmes.

'An excellent day. The whole process would be useful for post 16+ students.' T. No. E/3/1

'Quality of information (about design process) ideal for A2 work.' T.No. D/3/1

'I think these examples will work well in the classroom with older pupils.' T. No. D/6/1

This message was further elaborated in the two formal teacher interviews conducted later in their schools. Teacher A suggested quite specifically that the sessions should also be offered at Key Stage 3 level (implying that the one she had attended had not been) where there is a huge need to develop more creative approaches to designing and making. Both teachers said that the activities weren't immediately transferable to this lower age group. Moreover, it was felt that some of the 'take-away' materials needed to be 'translated' for classroom use at that level and that these could be developed further. They pointed out that the prompt cards, visual images and other resources that are so valuable to this approach are very time consuming and difficult to reproduce.

Both teachers were clearly enthusiastic about the sessions and had personally enjoyed the 'immersion' approach of many of the activities provided. The practical element of the workshops was seen as most beneficial and it was this that could be followed through at Key Stage 3 – and extended to teachers making handling collections for their own use with younger groups (for example, in smart textiles).

The ergonomic handling workshop for 6th formers could be extended for teachers – how to produce this handling collection and its scheme of work. (Teacher A, interview)

vi) Confidence in developing creative responses

Having asked teachers at the start of the day how they rated their confidence in developing creative responses in learners, this question was asked again at the end of the day, to see if there was any change in their views. The shift in responses is shown below. The percentage of teachers rating this 'high' or 'very high' had risen from 61% at the start of the workshop to 92% by the end of the session. The teachers who were less certain of their

Figure 1.

Confidence in developing creative responses in learners

before workshop
after workshop
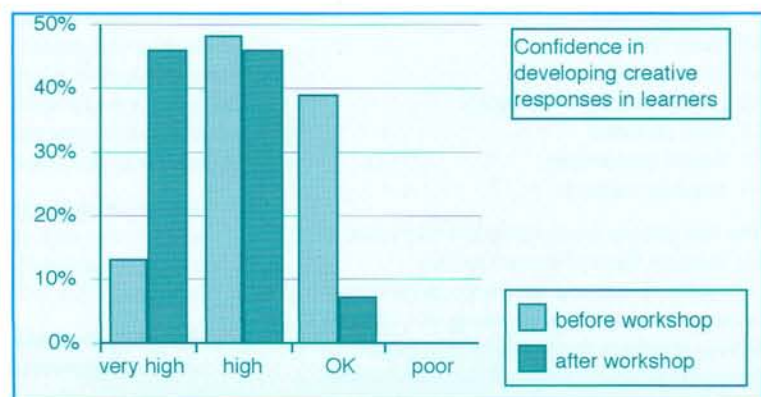
ability in this area (the 'OK' group) had shrunk from 39% to 7%.

It is important to identify the reasons for this positive impact, and in this case it was easy to do. There was a strong feeling that the principal reason for the clear success of the workshops lay in the value of 'hands-on' experience and practical strategies, specifically related to the modelling techniques that were presented and explored during the workshops.

'New ways to inspire creativeness – not just sitting and trying to come up with something.' T. No. C/6/1

'Tips for modelling.' T. No. C/9/1

'I made a model which I am pleased with.' T. No. C/5/1

'Better understanding of generating ideas.' T. No. D/1/1

'Concentration on ideas rather than presentation.' T.No. E/7/1

We asked teachers how the workshops had improved their ability to support learners. And we compared their responses to the rank order that we had produced from the their responses at the start of the workshop.

It is interesting to note that 'creativity', 'having ideas' and 'communicating ideas' stay high in the ranking. But it is even more interesting that 'being innovative' has shot up the ranking and that this is mirrored by the industry related elements that the teachers had experienced during the day; notably 'consider industry' and 'working in teams'. The biggest 'losers' in the rankings are 'make things' and 'plan carefully', and both of these give us insights that we explore below. The combined list is shown opposite (Figure 2).

vii) Overcoming the 'play safe' ethic

In developing teachers' understanding and skills, we must always keep in mind the priorities that drive current practice in schools. There is an accumulating body of evidence that – in design terms – these practices are distorted by the priority to 'play safe' in the face of the prevailing audit culture in schools. This priority operates as much for students as it does for teachers. Students are assessed in their project work against criteria established by examination boards (for GCSE, AS and A2 Level awards), and teachers are assessed against Ofsted criteria and league-table performance scales. The resulting ethos is not supportive of creative risk-taking in the classroom, and indeed has been described as one of 'coercive and authoritarian governmentality' (Shore and Wright, 2000). It is in this setting that priorities like careful

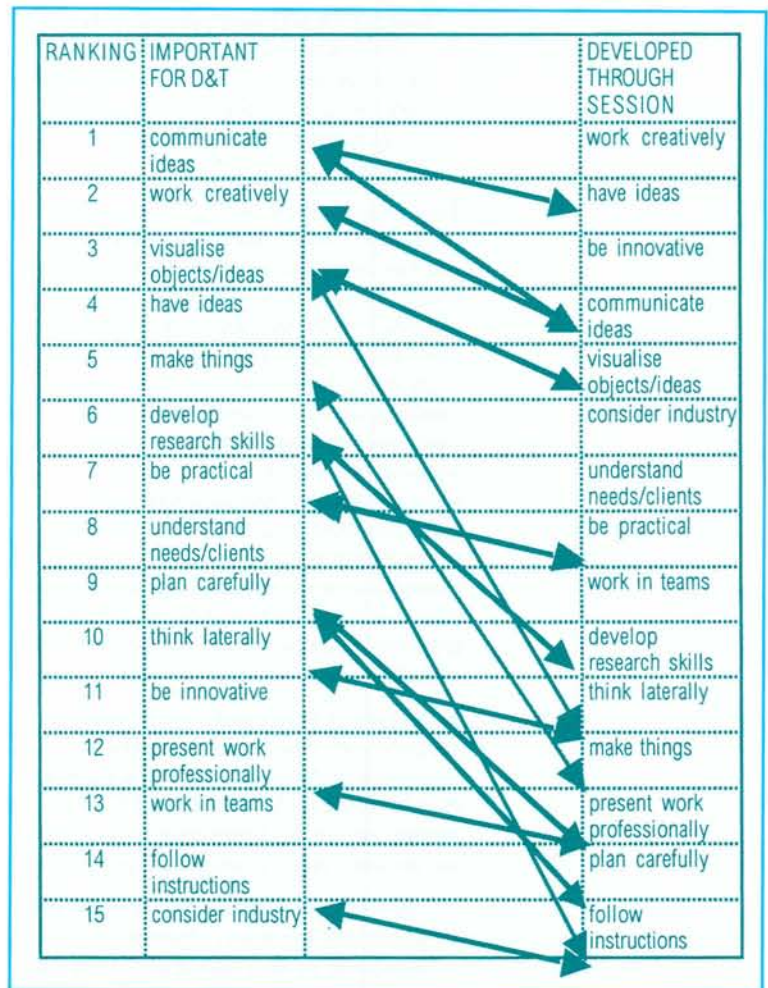| RANKING	IMPORTANT FOR D&T		DEVELOPED THROUGH SESSION
1	communicate ideas		work creatively
2	work creatively		have ideas
3	visualise objects/ideas		be innovative
4	have ideas		communicate ideas
5	make things		visualise objects/ideas
6	develop research skills		consider industry
7	be practical		understand needs/clients
8	understand needs/clients		be practical
9	plan carefully		work in teams
10	think laterally		develop research skills
11	be innovative		think laterally
12	present work professionally		make things
13	work in teams		present work professionally
14	follow instructions		plan carefully
15	consider industry		follow instructions

Figure 2.

planning and careful making are elevated above risky modelling. So it is no small achievement that as a result of the workshops, the creative – and risky – ethic has (to some extent) prevailed in the minds of the teachers, reducing the priority of 'safer' practices.

We have already drawn attention to the extent to which the designers and Design Museum staff were aware of these concerns.

'the main risk they were concerned about was risking A-C grades by doing something that they were not sure was allowed by the GCSE boards' (Dyson designer)

The extended interviews with teachers enabled us to get closer to this issue. Teacher B, who had recently completed a design and technology degree, felt that design in schools didn't allow opportunities for real creativity, being curtailed by exam board requirements that didn't reflect how designers operate in industry.

'The 'look beautiful' syndrome in schools is crushing out real design – the stuff you find at ...[in industry]. Assessment in schools is too rigid, making teachers direct

students towards safer outcomes. We need to give students knowledge about real world design so that A2 can better prepare them for career paths. At the moment A2 is a glorified GCSE.' (Teacher B, interview)

This 'look beautiful' syndrome operates at two levels – both in portfolios (where the graphics have to be beautiful) and in the final product (where the workmanship has to be beautiful). Both interviewees were clear in their shared understanding that assessment leads design in schools and that in order to satisfy grade criteria set by exam boards, designing was characterised by a 'lock-stepping' process. Both interviewees recognised that as long as teachers are uncertain about the reaction of examiners to the more experimental nature of designing exemplified in the workshops, there will be a tendency for teachers to 'play safe'. In the prevailing audit culture, we can hardly expect otherwise.

In the light of these concerns and of the comments of Ofsted on the superfluous decoration of design folders, it is interesting to note the parallel comments of Ofsted on primary design and technology, where there is not the same external assessment pressure.

> 'By contrast with secondary schools, this assessment [formative observation] is less influenced by the visual quality of design portfolios and concentrates more on pupils' ideas and their ability to develop them." (Ofsted 2002/b) (our words]

Both interviewees enthused about the value of practical engagement with a design ethic that is dramatically in contrast with the approaches that typify school-based (examination-oriented) designing. Specifically the priority given to spontaneity, quick thinking, quick modelling, instant trying-out, and immediate modification as part of a process of iterative designing was warmly welcomed. They both thought that design and technology would be much better if it incorporated more of the activities they had experienced in the workshops and that there should be an ethos of 'making it better' in schools rather than an emphasis on 'pretty portfolios' and on the manufacturing quality of the final product.

viii) The value of direct, hands-on activity
Teacher B highlighted the importance of having the opportunity to engage in these approaches herself at the session. Although this is already a part of what she teaches at A2 level, the experience of being taught how to do it in a real design situation developed her knowledge about how to improve this aspect of her own teaching.

'I am more confident in card modelling now – and in my own view of designing i.e. making mistakes. The emphasis on iterative design reinforced this view.' (Teacher B, interview)

This teacher also felt that the workshop had changed the way she thought about design at university and how it could be better linked to sixth form study. Design competitions of the kind that exist at university could be introduced at AS and A2 Level to give students a better understanding of the importance of prototyping. She felt that the modelling activities in the workshop were very relevant to practical activities in the classroom. To this end, the 'case study' approach from the Dyson team – looking at the development of the DC05 from breadboard to final prototype – was easily transferable to case study work in the classroom.

It is important to note in these interviews that both teachers talked at length about the value of the approach in the context of AS and A2 Level study. They felt that working with relatively small groups of able students enabled them (the teachers) to operate more experimentally, encouraging the students to step out of the linear process characterised by GCSE design and technology. For this purpose the sessions had provided 'springboards' for developing design in more challenging ways.

> The 'game' ideas and how to set up situations for design gave me new approaches for stimulating thinking in the classroom. My A2 group took to this 100% – especially through extra curricular work with drama. I feel very confident in using some of the activities again – and have planned to do so. (Teacher A, interview)

Conclusions
In the light of these findings, we made a series of recommendations to the Design Museum concerning the further development of the 'designers in action' workshop series. It would be inappropriate to report these recommendations here, except to note the general thrust of the first recommendation that the series should definitely be developed and extended. For there is absolutely no doubt that the Designers in Action programme of workshops has been received with great enthusiasm by teachers. Throughout the workshops, the *attitudes of the designers, the hands-on experience*, the *practical strategies* and the *'real world' design industry understanding* came in for strong commendation. The teachers worked through

the days with real energy and excitement and report in glowing terms about the value of the workshops in helping them to be more creative – both as individuals and in their teaching.

Specifically, teachers report that they have a much fuller appreciation of practice in the design industry; that they have greater personal confidence concerning creative approaches in the classroom; and that their personal design practice has been stimulated and extended. Given the comments of the Ofsted inspectors concerning the teaching of design processes in schools, teachers desperately need the kinds of experiences provided by these workshops. We commend the Design Museum for launching the initiative, and we seriously hope that the programme will be developed and extended so that it can be offered to many more teachers.

'An excellent day – well done.' (T. No. C/6/1)

'Excellent, hands-on work. Good sharing about industry ... better understanding of generating ideas.'(T. No. D/1/1)

'A nice insight.' (T. No. C/8/1)

And finally
Amongst the data we collected for the evaluation was a sheet on which teachers were asked to identify the 'best' and the 'worst' things about the workshops. Teachers found it hard to identify the 'worst' features of the workshops (because they didn't think there were many), but, when pressed to do so, they did their best. The list is telling, and this one captures the essence of most of the comments. The worst thing was...

'Not having ALL the department here to experience this.' (T. No. E/1/1).

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Note
1. The interviews were not recorded and transcribed, and the text appearing in single quotation marks is based on field-notes taken directly at the interviews. Whilst the text is therefore not direct quotation, it is a true reflection of the meaning of the exchange.

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