

# DIVERSITY – MEMBER AND EXPERT VIEWS

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## Diversity

*A report by the British Computer Society (BCS)*

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Established in 1957, the British Computer Society (BCS) is the leading body for those working in IT. With a worldwide membership now of more than 68,000 members in over 100 countries, BCS is the qualifying body for Chartered IT Professionals (CITP).

BCS was incorporated by Royal Charter in 1984. Its objectives are to promote the study and practice of computing and to advance knowledge of, and education in, IT for the benefit of the public. BCS is also a registered charity.

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## **FOREWORD**

Through late 2018 and early 2019 BCS undertook research into diversity amongst its members and also analysed the current ONS figures.

During this time we received some personal member feedback on their experiences and some expert input too. This document collates those items for background reading.

# 1 NEURODIVERSITY EXPERT VIEW

John Levell FBCS CITP MBA

Dyslexia is only one of a range of neurodiverse conditions that together are thought to affect around 15% of the UK population. A non-exhaustive list might include dyslexia, ASD (including Asperger's syndrome), DCD (dyspraxia), ADHD and so on.

According to the British Dyslexia Association, 10% of the UK population are affected by dyslexia, across the entire spectrum of IQ - that equates to around 6 million people and 100,000 dyslexic school leavers each year.

UK government statistics collated for DSA also indicate that dyslexia is by far most prevalent disability amongst graduates, with more than 13,000 dyslexic individuals graduating annually. It would not therefore be surprising to find that many dyslexics work within organisations in the IT profession, at all levels. Certainly, there have been many very high-profile dyslexics in the sector, such as Steve Jobs (Apple), Bill Gates (Microsoft), Bill Hewlett (HP) and John Chambers (Cisco).

Equally, dyslexics have proven themselves to be adept entrepreneurs - a report by Professor Julie Logan of CASS Business School indicates that 25% of entrepreneurs are dyslexic (vs 10% societal norm).

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## NEURODIVERSITY IN IT?

John Levell is a Chartered Fellow of BCS and has spent most of the last 30 years shaping, delivering or advising on digital disruption – as consultant (EY Associate Partner and Deloitte Director) but also COO and CEO in mid-sized and growth companies.

Today, he shares his time between the Levell Partnership (an independent consultancy advising on innovation, technology and transformation) and his role as joint Chair of the British Dyslexia Association. He became involved in neurodiversity having been diagnosed with dyslexia at 42 and took on the role of executive sponsor of the EY Dyslexia Network from its inception in 2012.

Based on his experience in the industry, John maintains that many of the most talented programmers, architects, designers, security consultants, change managers and others that he has worked with have been neurodiverse. Speaking recently at the NeuroCyber2 Conference he claimed that regardless of the typically low levels of disclosure captured by most HR teams, IT has historically been unknowingly reliant on neurodiverse talent.

This possible correlation between strength in IT and neurodiversity is also referred to by Prof. John Stein, Magdalen College, Oxford, who says that dyslexia may be a 'profound positive when designing software'. (BCS article: Why Dyslexics Make Good Coders, August 2018).

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## BUG OR FEATURE?

It is appealing to speak only of the upsides of neurodiversity. However, dyslexia is of course a disability in the meaning of the Equality Act 2010 and a typical diagnosis will refer to a pattern of

strengths and weaknesses. The balance and mix of each will vary substantially between individuals.

Whilst 'dyslexic thinking' may result in an individual being an incredibly talented solution architect, they may also be substantially and, often invisibly, hindered by a range of challenges. For example, their reading speed may be a fraction of that normally expected; processing verbal instructions may be a problem and there are any number of other possible issues. In workplaces that are designed to meet the needs of the average person (the other 85%), this can be stressful, exhausting and career limiting, particularly where the invisibility of the disability makes it hard for others to understand the nature of the challenge. So, the answer for many would be 'Yes... both superpower and disability.'

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#### ROLE MODELS... WHERE HAVE THE SENIOR DYSLEXICS GONE?

The ONS survey shows less people with disability at more senior levels – it is not clear why this is the case. Levels of disclosure also vary significantly between ethnic groups and based on gender. It could be that they were simply not the best candidates, perhaps unconscious bias amongst those hiring or a choice by individuals not to apply for fear of failure or lack of self-belief. Equally, it could be for a range of other reasons: whether on the part of candidates or not. For example:

- No diagnosis – Some very experienced IT professionals are less likely to have been diagnosed as neurodiverse as children so may simply not know that their success is in part caused by their different thinking.
- Negative stereotypes - Neurodiversity is complex and not well understood – many people hold negative stereotypes and are therefore unwilling to disclose a disability that is not necessarily visible to all.
- No need - Successful people tend to play to their strengths. Having risen to a senior role they now have the right sort of work for their skills and the right support around them (e.g. a team, a private office or PA)

A 2016 study by ACAS identifies a number of reasons for this including: the individual not having had their disability diagnosed; fear of the consequences of disclosure; experience of adverse reactions in the past and so on.

There is no doubt that there are a number of high-profile neurodiverse individuals who prove that neurodiversity and success are very consistent. However, whilst inspirational, it can be difficult for a computer science graduate struggling to hold down their first technical project management role to relate the achievements of Bill Gates or Richard Branson to their own day to day working lives.

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#### CONCLUSION

Regardless of the statistics, good or bad, there is need for improvement in the way that we recruit, manage and measure the neurodiverse within our organisations. Not just for ethical, social or moral reasons, not just to comply with the Equality Act but also because there is an economic argument.

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At a tactical level, applying different thinking styles and viewpoints to any system is likely to result in a better design, solutions that cater better for a wider variety of user needs are robust in the face of a wider variety of attack etc.

At a business case level, the neurodiverse represent some 15% of our customers, suppliers, voters, and potential employees. They span ethnicity and gender and represent a substantial and inadequately tapped resource.

But, more strategically, IT has always benefited from those who think differently – from the Babbage/Lovelace counting engine to AI and quantum computing. Diversity of thought leads to ideas and innovation – it fuels the digital transformation of our world. Organisations seeking to obtain or hang on to competitive advantage in a world dominated by technology must learn how attract, reward and retain those most able to drive the next wave of innovation and change.

## 2 WORKING IN IT WITH MENTAL HEALTH ISSUES

Simon Johnson MBCS\* writes about his experience of working IT with mental health issues.

I am a middle-aged man, with OCD and depression, working as a software developer. Both conditions can be quite disabling and make me feel low, dwell on suicidal thoughts and frequently feel anxious and afraid. Fortunately, I am blessed with a supportive wife.

It was quite a few years before I received a diagnosis, and before that I did not understand what was wrong with me. I was uncomfortable being near most people and sometimes received funny looks from people who were watching me.

I was diagnosed originally twelve years ago. I have seen quite a few psychiatrists; on the NHS these tend to rotate every few months, so you are lucky if you see the same one twice. This means you have to keep repeating yourself which is frustrating and upsetting.

Later, I found a psychologist (again on the NHS) to be more helpful. She taught me some coping strategies and to understand more about how the OCD's intrusive thoughts affect me.

I have had to take time off from work. The worst was some years ago when I had what you might call a breakdown and was off sick for seven weeks. The employer at that time provided health insurance and so I had access to a private CBT therapist. I saw occupational health and arranged a phased return to work, gradually increasing my hours. At the same time, I was allowed to work at home a couple of days each week, so I could see the therapist and the Community Psychiatric Nurse. I had to make some of this time up. I also was able to move to another desk which did not have so many people walking past it. I did notice, after my time off, that the private health insurer was changed to one which was not as financially supportive. I don't know if that was because of the expenditure incurred for my treatment or just a coincidence!

In more recent years I have worked in the higher education sector. I have had a couple of weeks off due to my condition. The time off with depression triggered a referral to occupational health. Fortunately, they were understanding.

I moved jobs a little while ago and the psychologist I had been seeing wrote to my new employer's occupational health department to give them guidance on how to help me. I have discussed how my condition affects me with my manager and he has been very understanding, e.g. he has said I can work at home or go for a walk if I am finding things difficult. I currently work at home one day a week as I find the three hours commuting (tube and train) each day to be both mentally and physically tiring. I realise I am fortunate in this regard as many employers are not so accommodating. Having said that, however, occupational health has classified me as being disabled, which is a protected characteristic under the Equality Act. This means employers are supposed to make reasonable adjustments. What is "reasonable" is open to interpretation.

Ultimately it is up to the individual if they wish to disclose their condition to their employer.

I realise not all employers will be as accommodating as mine, despite what the law says. I have tended to deal more with occupational health than HR, although of course when off sick I have had to send a doctor's note to my manager. I haven't tended to tell many colleagues about my

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condition, just the odd one or two, but I think nowadays people are more likely to be understanding. Going back 20 years (before I was diagnosed) I don't know if it would have still been the case.

Being able to get outside, and have time doing things I enjoy (rather than a constant round of tasks to be accomplished), all help.

\*Simon Johnson is a pseudonym

### 3 UK CYBER SECURITY NEURODIVERSITY PILOT

Richard Henson FBCS CEng CITP, Senior Lecturer in Computing and Knowledge Transfer Fellow in Information Security at the University of Worcester, explains a study aiming to help neuro-diverse people not currently in employment.

In Worcester, the UK Cyber Security Forum has been running a pilot study into training and employing neuro-diverse people currently not in education or employment. Initially funded by the Department for Digital, Culture, Media and Sport, the programme has been running since June 2018 and has so far trained 35 people and found employment for 17 of them. Training is a blend of taught group sessions, self-paced learning provided by Immersive Labs and one-to-one coaching. Diversities amongst the recruits are primarily Autism Spectrum Conditions and Attention Deficit Hyperactivity Condition, but other challenges and co-morbidities are found (e.g. Dyslexia, Dyspraxia, Dyscalculia) and no formal diagnosis is required to enrol.

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#### TRAINING NEEDS

Many of the trainees have been out of work for considerable time, despite many being qualified to degree level in technical subjects with an acknowledged skill shortage, such as IT. Experience has shown that the most common barrier to employment is depression and social anxiety triggered by the breakdown of previous work or training arrangements. Even for the trainees who are already trained to a high level in IT, the training has proved an effective mechanism to reduce anxiety and restore confidence. Indeed for at least two of our trainees the input over a relatively short space of time has been enough to boost their confidence and get them back into the workplace (one as a software developer and one on an apprenticeship with a local IT company).

A lot of the reasonable adjustments we have put in place for the training are relatively simple solutions that employers could adopt at little to no cost. For example, the provision of a quiet space or 'break out' room, noise cancelling headphones and regular breaks. We have also held regular one to one discussions with each trainee to work out plans based on their individual needs. It is important for an individual to recognise the areas where they may be struggling so that they know themselves what reasonable adjustments and strategies they need. Sensory issues such as sensitivity to light or sound are easier to identify and address than other more intangible difficulties involving for example time management, organisation and memory.

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#### PATHS TO EMPLOYMENT

Employers are beginning to acknowledge the benefits of having a more diverse workforce. These include: a variety of perspectives representing different world views, particular skills in problem solving and attention to detail. There is a willingness to embrace neurodiversity in the workplace with companies beginning to recognise that some workers on the autism spectrum are able to focus longer on details and patterns and can outperform neurotypical people on process driven tasks, like software QA, image analysis, or cybersecurity.

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In all cases though it has been found that traditional interview techniques are not appropriate and will bar even the most competent candidates. The biggest single improvement that can be made to encourage diversity is to replace traditional interviewing with alternative assessment processes such as workshops, online tests and internships.

Many of the trainees are now employed part time by the IASME Consortium in their Community Secure Operations Centre. This has provided a manageable transition into the workplace for them. They are still supported in the same way by the same staff as they were during the training. This means that they are able to focus on the technical nature of the work without anxiety or sensory difficulties overwhelming and distracting them. We are also able to experience the situation from an employer's perspective which gives us valuable insight when offering advice and strategies to prospective employers.

## 4 A FRONT LINE PERSPECTIVE

Nicki Rayment is Head of Digital Services at Cornwall Partnership NHS Foundation Trust, a Community and Mental Health Trust covering Cornwall and the Isles of Scilly. She tells Johanna Hamilton about digital transformation within the NHS, over her 29 years of working for our national treasure, and why there is much to be happy about with diversity.

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### TELL ME ABOUT HOW THE NHS HAS CHANGED DURING YOUR CAREER?

This is year 29 for me in the NHS. When I started technology was still very much based around mainframe and green screen systems for patient administration, lab systems etc. At that time we probably had no more than about twenty desktop computers across the whole of the hospital, and most documentation was still done on electronic typewriters. The use of technology in the NHS has moved from something that was quite niche and people were apprehensive of, to something that is intrinsic to the everyday function of the NHS and it's hard to see how we could function without technology now. The emerging use of artificial intelligence to improve prevention and diagnosis and the use of robotics in health care are both fascinating and exciting.

Across the NHS there are numerous clinical systems which support patient care; quite often these are unique to individual organisations. In the early 2000s the National Programme for IT planned for us all to be on just a handful of clinical systems and for those systems to talk to each other; that didn't happen, however it did lead to the existence of the Spine which allows NHS organisations to have a single reference point for everyone with an NHS number. We also have the NHS Summary Care Record, which is fed from GP systems across England and provides access to specific information, such as prescribed medications and allergies. This is great for Cornwall with its influx of holiday visitors, as it means if you need health care whilst on holiday clinicians can, with your permission, access this information about you in seconds to support your care.

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### WHY DIDN'T THE FULL TRANSFORMATION HAPPEN?

The NHS, as you're probably aware, isn't just one organisation, its lots of separate organisations; all slightly different offering different services and commissioned in different ways; from this aspect the one size fits all approach of the National Programme didn't work. The challenge for the NHS now is to achieve the same outcome through interoperability; the Local Health and Care Records programme is focussed on connecting existing systems together to facilitate a single view of a patients' health and care record.

Technology in the NHS can be a dichotomy; in one organisation you can find areas that are making use of modern technology, such as robotics for dispensing medicines, yet in the same organisation there can be legacy systems, such as older patient administration systems, that can't or struggle to meet the current interoperability standards.

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### HOW DOES GDPR WORK WITHIN THAT ENVIRONMENT?

The NHS has long established approaches to consent, patients are always asked whether they consent to share information with others involved in their care. For example let's take health visitor and midwifery services, so the midwifery service will be in the acute hospital, you've had a baby but they've got to pass that information to your health visitor and the health visitor works in a community setting; there will be an information sharing agreement in place between those organisations to support that happening.

In terms of GDPR we haven't seen too much impact because we always had this culture in place anyway. We also have the concept of legitimate relationships between a healthcare professional and a patient; this means if a clinician has no direct responsibility for your care then they will be asked to justify why they are accessing your electronic health record. The duty to share information can be as important as the duty to protect patient confidentiality

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IT IS CHANGING. CAN YOU TELL ME ABOUT HOW APPS ARE CHANGING THE NHS?

As the health and care system as a whole moves towards a preventative approach, there is a swing in focus towards increased use of technology to promote health, wellbeing and self-management. People today will be faced with a myriad of apps that could support their health and care, but how can people tell which ones are good? To help with this the NHS Apps Library has been launched to assist patients, public and NHS staff find trusted health and wellbeing apps. These include free apps but also those that clinicians may prescribe as part of a care pathway, for example apps have been developed for chronic conditions such as COPD (Chronic Obstructive Pulmonary Disease) which when used as part of a care pathway with a clinical team can help to support keeping people well in their own home rather than them coming into a clinical care setting.

The NHS App has been launched this year; although its early days yet, eventually this will offer a way for patients to securely access a range of health services; including accessing their own health records, booking clinical appointments and so on.

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HAVE YOU BEEN INVOLVED IN ANY TRANSFORMATIVE PROJECTS?

Plenty, the most significant ones for me are where we've moved from paper records to electronic records. I've done that in a couple of organisations, moving from old paper case notes being stored and moved around hospitals and health care settings, onto an electronic record that is accessible wherever it's needed by the clinician. Whenever we talk with clinicians their biggest challenge is what they term the "the 3am test"; this is when they are on-call and they need to treat a person in crisis or unwell, where do they go to find the information they need? Moving to an electronic record lets them do that quickly and from any location.

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WHAT IS THE BIGGEST LESSON YOU'VE LEARNED IN YOUR ROLE?

Things being difficult isn't a reason not to do them. Quite often, with technology, you'll go into a situation where there's a challenge of "oh we tried that before, it didn't work." or "we don't want to do it." Many systems have intricately evolved over a long period of time; so, when you need to

make a big change it feels really difficult. I suppose my biggest lesson is don't use a sticking plaster. If it needs to change, however difficult it's going to be, do it now because it will be harder in five years' time.

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WHAT ADVICE WOULD YOU GIVE TO A CIO TRYING TO DO THEIR OWN TRANSFORMATION PROJECT?

Engage with people; get out and about and keep talking and listening. Keep asking how we can make it better. People will say, "oh, the IT system's rubbish." Okay, but what's rubbish? What's not working? Because we can usually make it better but we can only make it better if you can tell us what's wrong with it. Understand how it's used and how the system feels to them. It might be great for us, but when you're a community nurse who's out and about in rural area with no signal it's a completely different world.

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SO TELL ME ABOUT YOUR OWN CAREER TRANSFORMATION?

I left school and had children quite young. When it was time for me to go back into the workplace I knew I could do so much better with some qualifications, I went back to night school and got the basic qualifications that I should've done while I was at school. I was really fortunate that my second job was in the NHS.

The NHS has a strong ethos around supporting continuing professional development; for me this has meant that I have been able to continue my education alongside my professional career and through the support of the NHS and my own investment in time, I achieved a university degree. Something that I thought was out of my reach.

This year I am really excited to be on the second cohort of the NHS Digital Leadership Academy, which, if I am successful, will result in a Post Graduate Diploma in Digital Health Leadership.

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SO, THERE'S AN NHS LEADERSHIP ACADEMY TO ACTUALLY ENCOURAGE PEOPLE TO LEARN?

Absolutely. The NHS Leadership Academy offers opportunities for all levels of staff across the NHS to develop. Last year the new NHS Digital Leadership Academy was launched, this is a real positive leap forward and will help to support current and future digital leaders in the NHS.

Alongside this Health Education England is promoting a digital literacy programme to encourage all NHS staff to think about their own digital skillset.

I've felt really supported in the NHS. The investment in my continuing education has meant that I've been loyal to the NHS. If you want to work in IT, then the NHS has so many opportunities for you.

It's not just about qualifications though, we also need to see IT as a profession. This is one of the reasons why we've invested in BCS corporate membership, it opens up avenues for people to develop professional networks and achieve recognised standards such as RITTech.

HAS THE NHS EMBRACED APPRENTICESHIPS?

Definitely; NHS organisations pay a levy into the apprenticeship scheme and we really encourage people to go to take advantage of what's on offer; what's great about these as they are accessible for staff of all levels. We have staff in post that are taking advantage of these as well as taking on people directly into apprenticeship positions.

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ARE THERE ANY BARRIERS FOR WOMEN WHO WANT TO WORK IN IT, IN THE NHS?

I've been really fortunate in that I've never felt discriminated against being a woman. When I came into IT at the NHS in 1990 there were fewer women than men and I think that for some of the more technical facing roles then women do number 20% or less of the workforce. However, within my team there's more of a 50/50 split. I think this is generally because of how many women have moved into their roles; administrators of paper records have had to migrate to digital systems and quite often become the system administrators of these. The modern digital services department is not comprised of just technical engineers; we have system administrators, project managers, trainers, web developers, transformation leads - it's about finding people's strengths and building on those; it's not necessarily a prerequisite to have a technology related qualification.

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DOES THE NHS ENCOURAGE DIVERSITY?

Equality and diversity is embedded at the very heart of the NHS, we celebrate it. The NHS holds an annual Equality, Diversity and Human Rights week and local organisations hold their own events.

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WHAT IS YOUR TAKE ON FLEXIBLE WORKING?

Being able to work from anywhere and at flexible times is a really positive thing. I get frustrated when I see surveys that show a high percentage of women working part time being presented as a negative; it's fantastic to be able to stay in the workplace on a part-time or flexible basis.

The vast majority of the working demographic will have home commitments, kids to pick up from school or like me, have grandchildren and elderly parents to support. So actually, being able to work flexible hours or having part time working or being able to do term time only is really, really invaluable. And that applies to both genders! It's really difficult if you're doing a 9-to-5 job and school finishes at half-3. Every NHS organisation I've worked in has been really positive about supporting flexible working, and technology is making that easier.

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TELL ME ABOUT YOUR PROUDEST MOMENT?

My proudest moment was when I was awarded the Gold Award for Leadership in my previous role. I joined a team that had been through a tough time and the IT infrastructure had been neglected, morale was low and the team were at the bottom of the staff survey. Within five years we turned that around, technology was modernised, staff were invested in and felt positive about

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the contribution they made rather than being seen as an overhead in a backroom and we were in the top 3 of the staff survey. For me it's not just about the technology it's about the people, often unseen, who keep that running every day.

## 5 AGE – A MEMBER WRITES ANONYMOUSLY

I will be 50 next year. In my experience, public sector/civil service and universities tend to be quite good at employing older people - I got my latest job last year when I was 48. The private sector is not as good.

A few years ago, I think when I was in my early 40s, I had an interview for a private firm. The interviewer asked me how I would feel about working with younger colleagues. I gave a suitably positive answer, but didn't get the job. Now I realise that he shouldn't have asked me that question as age is a protected characteristic under the Equality Act.

Personally, when I was a younger employee, I liked having older colleagues around as I could benefit from their experience. And even though certain things may change (e.g. the latest programming language or other technology fad), often the underlying principles are the same (e.g. design patterns, common gotchas, etc.)

Another thing I have noticed is articles like this one: <https://www.techrepublic.com/article/10-questions-software-developers-should-expect-in-a-job-interview/> - where you will see this, under the subheading 'Are you working on a passion project?'

*'Employers want to see job candidates who are passionate about their work, Halpin said. "Candidates should showcase their passion for development and talk about any projects they're working on outside of work," he added. "For instance, any projects or snippets of code stores on a Github account are great examples to bring up."*

Now this may be fine for young, single people, but for those of us who are married, with kids, and who have a life (and responsibilities) outside of the work environment, I do not have the time or energy to work on projects outside work. Actually, I never have, even when I was younger, and it irritates me that IT professionals are expected to do extra work like this.

Again, I also get tired because of my medication, so the above extract is potentially discriminating in that way too.