Imagine a world where we work 15 hours a week with greater access to leisure, pleasure, intellectual and social stimulation? We’ve been promised this for decades, but the advent of computers has hermetically attached us to our iPods, iPads and office pods. Artificial intelligence offers us a one-time opportunity to break free of our addiction to working on the chain gang, although it is as yet unclear as to whether our merger with artificial intelligence will lead to a “War of the Worlds” or a harmonious fusion of man, woman, project and machine.

“Brain Based Enterprises” is a new book by Peter Cook that explores the role that innovation and creativity will play to help us survive and thrive in the 4th Industrial Revolution. This is not the stone age, the steam or the industrial age, but the information revolution, where value is created primarily through the intelligent combination of knowledge and wisdom. How shall we cope in a world where it has variously been predicted that up to 50% of our jobs will disappear in the next few decades? What does that mean for education, where the half-life of knowledge is in free-fall? What will become of money in such a world? How shall we fall in love? In a business sense, what will teams look like? How shall we project manage teams of diverse people? In this extract from the book, we begin by outlining the various scenarios that will inform our lives as we merge with machines and, later on, look at some implications for teams and teamwork.

Brain Based Enterprises

It’s 07.05 am on 05 January 2030 ... The day begins for Julie:

Julie wakes up at exactly the optimum time to maximise her sleep, wellbeing and energy, to a vibration in her neck from her embedded wellbeing monitor. Some ambient music bathes the room, bathed in soft purple swirling lighting. The smell of freshly brewed coffee percolates upwards from the kitchen. These are things she chose in her psychological contract with Rover. In a few minutes, coffee, water and fruit slices are brought to her by Rover, her personal robotic assistant. It’s time for Julie’s early morning well-being session, led by her ever-faithful 24/7
digital guide, who has already ironed her underwear, run a bath, organised her bag for the day, checked her travel schedule, confirmed her appointments and so on.

Rover also monitored Julie’s vital signs and adjusted her personal exercise routine around her expected physical activity during the day, to maximise her balance of mind, body and soul. Rover is, of course, a robot and makes rational decisions based on an aggregation of big data about what’s best for Julie’s work, life and play. However, Rover has also integrated humanity by taking on board Julie’s own personal values within the decision-making algorithms that Rover uses ...

We are seeing the earliest signs and signifiers of a world where man and machine have switched roles with driverless trains, 3D printing, self-service shops, smart cities, smart homes, smartphones and drones. We can already measure our vital signs to improve our vitality and receive live updates on life threatening conditions to help us live long and prosper. However, the transformation towards our love affair with machines is not exactly new. We perhaps began to notice the difference as long ago as 1822 with Charles Babbage’s invention of the difference engine. Since that time, we have had the enigma machine, The Casio FX77 and many more devices that have enabled us to do ever more complex things. Many more things are still to come in our enigmatic relationship with machines via The Internet of Things, which promises to have 50 billion devices connected to the internet by 2020. Innovation consultancy Arthur D. Little (2017) report that any technology innovations that enhance people’s time to spend on higher level Maslow needs and that reduce or remove the need to focus on the lower level needs is a good innovation. We will increasingly have the ability to separate the things that satisfy us from the things that we have to do. It is entirely feasible that we will have time to enjoy those things in life that we do purely for their intrinsic value such as arts and crafts.

Perhaps, like Julie’s example in 2030, we’ll use machines to clear the space and time for us to enjoy such things. From coal mining to data mining we can envisage four potential future scenarios in our love / indifference / hate affair with man, woman, machines, robotics, artificial intelligence and official stupidity as shown in Figure 1 and described below:

**War of the Worlds:** In this dystopian view, humans battle it out with machines and all lose the value of each others’ contributions. Like the film of the same name, it is a zero sum game for all concerned with dramatic consequences for humanity, humility and technology alike. Despite this being a lose-lose game for all concerned, us humans love a little drama in our lives, so War of the Worlds is not a completely unlikely scenario, especially in some business sectors, where it may be seen as a battle for supremacy that will at least appeal to some alpha males and females.
Planet of the Apes: Humans decide to work without machines. This is an impoverished retro world in which humanity slides backwards overall, an ‘ignorance is bliss’ strategy. Although it sounds unlikely as a scenario, we already see attempts to ignore the march of automation in terms of the arguments about driverless trains in the UK and to a lesser degree road transport. Railways have the advantage of having rails so the destination and journey is already pre-set to some degree. There are also already examples of driverless trains over the world. As I write, we have experienced a series of lengthy strikes by rail staff in UK over the gradual erosion of human presence on their trains. The argument revolved around whether the trains would continue to have an onboard member of staff.
We have seen a less belligerent form of Planet of the Apes in the returns to various crafts, where human ingenuity and the personal touch are seen as more valuable / authentic than machine efficiency. Such nostalgia can co-exist with the efficiencies that can come from machines where people are prepared to pay a premium price for hand made products and services from craft beer to craft work.

**Attack of the Clones:** Machines not only augment human function, they mainly replace it, but without the human systems in place for us to enjoy the leisure time that this creates. We live easy yet unfulfilled lives as a result. Some observers have predicted that the technological singularity will signal the end of the human era around 2040, as superintelligence advances at exponential rates. We have not exactly been attacked by clones up till this point except in the movies, but just notice the quiet revolutions in areas that we take for granted. Your switchboard operator is digital, your lift operator is electric and some receptionists are now electronic. The Attack of the Clones scenario seems fairly unlikely, yet we already see how automation can de-skill jobs, such as car manufacture and agriculture if the people doing them do not step up to new levels to profit from augmentation. The choice is in our hands. All that needs to happen for this to become reality is for humans to decide to recline in their sofas and watch the world go by.

**The Man (Woman) Machine:** We work in an integrated way with machines, using them for what they do best and deploying human skills when they are of greatest advantage. As a result we live easier, more fulfilled lives. This is one-all draw in football terms, a win-win or ‘cobotic’ approach. This approach is already established in use within certain high tech professions such as surgery, electronics, pharmaceuticals and opticians, so it is not a work of science fiction. It would appear to be the ‘win-win’ position if we are prepared to adapt ourselves to realise the benefits but will require systems wide changes.

**Brain Based Enterprises** takes the view that the “Man-Machine” scenario is the best one for humanity, although it will require each and every one of us to adjust their approach to work, learning and play to make the most of what automation and machines have to offer us. It will be the realisation of what synth pop futurist Gary Numan offered us in his classic song “Are Friends Electric?”. In the book, we explore impacts for individuals, teams and whole enterprises. Here we tease out some of the implications for teams, project leaders and leadership in general.

**Leading Brainy Teams**

Views of leadership have changed over the ages, from ideas about war propounded by Sun Tzu and Machiavelli’s treatment via “The Prince” that focused on questions of influence and manipulation, through to the beginnings of a psychological approach around 100 years ago. It could be said that leadership thinking has mirrored the age in which the ideas were put forward. At the height of the industrial age, Frederick Taylor put forward the idea of scientific management, which focused on the organisation of work in the best way to gain output from
workers. Henry Ford was a great advocate of Taylorism and believed that his factories could be organised along the lines of scientific management and detailed work study.

Later on in the 20th Century Fordism and Taylorism were superceded by socio-cultural ideas about leadership and notions that the leader was the most important variable and could flex and bend their style to fit the situation. This eventually produced theories and models of Situational Leadership and the desirable notion of being a 9:9 leader. After all, who would want to be a 5:7 leader or worse? Desirable though it may seem that we can be all things to all people, more recently the issue of authenticity has begun to take hold as a major idea in modern leadership thinking. In the last 20 or so years, the task of leadership has also shifted focus towards the management of complexity, uncertainty and the unknowable through the seminal work of Ralph Stacey and Dave Snowden’s Cynefin framework, which offered five domains to help business leaders decide on the best approach to make sense of their own behaviour and that of others: simple, complicated, complex, chaotic and disorder. Team leadership must undoubtedly mirror the expectations and complexities of the age. Some of the considerations that leaders must face are explored here.

Team Chemistry

To move from brainy atoms (individuals) to brainy molecules (teams) needs the skills of team chemistry, otherwise known as facilitation, sometimes by someone within the team, sometimes by an external agent (catalyst), if the degree of personal involvement or complexity of the issue demands it. A great team facilitator will adopt a range of styles that are consistent with the need, shifting shapes in response to the evolving need across the entire spectrum of behavioural styles available to them. John Heron’s model of intervention styles is a useful way of thinking about facilitation, since he covers interventions across the spectrum from directive to non-directive and flags the many roles that a great facilitator must cover:

Prescribing (directive): Essentially a ‘tell’ style. For example: “Take these pills and you’ll feel better”. Prescribing is probably the quickest way to get someone to do something. However, the quickest way is not always the most effective way. We know full well that we don’t always take the doctor’s advice if it does not accord with our own wants, whims and fancies as articulated by the Dunning-Kruger effect, where people of low ability tend to assess their own cognitive abilities as being superior to experts and vice versa. It is perhaps for this reason that the other styles exist, since we are not that great at taking direct advice if it is dissonant with our prevailing paradigm.

Informing (directive): Neutrally passing on information, ideas and knowledge. For example: “I can tell you that your team scored minus 25 on risk taking”. This gives people the chance to make their own minds up without feeling pressurised or manipulated. Informing does not draw a conclusion. It simply provides neutral information, leaving the recipient to draw their own conclusions and formulate actions. However one then needs a lot of time for team members to process the information provided to them and come up with options and actions to address the need. There is of course always a risk that the information will be processed but no action
will result or possibly the ‘wrong’ course of action. Whilst informing may be more effective in the long-term, it requires more time and processing power than prescribing.

**Confronting** (directive): Involves challenging viewpoints and requires the examination of motives. For example: “You said that you wanted to devise a creative strategy, but I’ve noticed that every time we try to do this you want to talk about what the company is doing about the Christmas meal”. Confronting should not be confused with aggression – it can be done with a soft pillow as well as a hard edge. Confronting is however one of the more difficult interventions that a facilitator can undertake as it usually results in some level of cognitive dissonance, where people are held to account or get ‘found out’. Done with skill, it can be very effective and relatively quick, but once again the Dunning-Kruger effect applies and people can become actively defensive or, worse still, passively so, which is harder to spot.

Non-directive interventions usually take longer than directive ones. After all they are literally less ‘direct’. However they may be very effective in more troublesome situations. They also require greater levels of skill and sleight of hand techniques to make them work.

**Cathartic** (facilitative): Interventions that enable people to ‘get things off their chest. For example: “Can we spend some time exploring what it feels like for you to lead this project?” Catharsis can be extremely powerful as a means of allowing people to relive tension about things that are hard to express in more direct terms. One example of this is the use of extended metaphor, where the facilitator asks the team to describe the issue under discussion in metaphorical terms. Sometimes this level of detachment allows people to say hard to say or unsayable things.

**Catalytic** (facilitative): Providing a sounding board and helping others to come up with their own solutions. For example: “Would you like to explain more about the opportunities for business improvement?” Catalytic interventions build on the idea of catalysis in chemistry. A catalyst is used in small doses to promote a reaction, but is itself not involved in the actual reaction and remains unchanged at the end of that reaction. It is once again a detached position to take for the facilitator, giving others space to reflect, consider novel ideas and rethink old approaches.

**Supporting** (facilitative): Feedback to staff in which they are actively listened to and encouraged in what they are doing. For example: “I can understand why you would feel that the company is benefitting from your strategy to encourage innovation from what you have told me”. Supporting is often of great value when using the more challenging interventions in the facilitator’s toolkit. It provides the essential positive assets in the ‘bank balance’ between the facilitator and the team to draw on when dealing with more challenging elements of the team’s agenda. In general it is always wise to use plenty of pull strategies if you are also pushing for change and a sensible ratio is at least 2:1 pull:push. It is also important to consider the ‘rhythm’ of your interventions. After all, facilitation is like a dance at some level and keeping in step with those you are attempting to engage in the dance of change is important if you are to maintain a high conversion ratio of thoughts into actions.
Great team leaders are both well-prepared and also great improvisers to follow lines of enquiry, balancing the need for direction with the need to facilitate thinking and action within teams. In general a move towards more engaging styles of leadership will be needed to facilitate diverse teams.

**Team Diversity**

Gone are the days where a lone individual could envision and develop all the ideas to conceptualise and execute an innovative product or service. Innovation is now a team game and one where cross-disciplinary thinking and working are essential. In pharmaceuticals, we combine apps with traditional treatments as ‘Healthware’. Remote medicine is not far away. In financial services, Fintech may replace traditional banks that have always been interested in automating functions to reduce costs, provide better audit control and improve customer access. Even the United Nations can no longer recruit weapons inspectors who are PhD Physicists or Chemists alone. They must be skilled in computing, biotechnology, physics and so on to function effectively and work as an effective team to face the complexity inherent in modern weapons and warfare. How then shall we combine team intelligences for SCA (Sustainable Cooperative Advantage)?

Should diversity be distributed across the whole enterprise or concentrated in areas such as the Research and Development Division? This is a hard question to answer with certainty, as it is highly situational and culture dependent. However a mathematical comparison gives some clues. A study was made on the innovation structures at Apple and Google and some differences observed:

In 10 years Apple produced 10 975 patents from a team of 5232 inventors. Google did 12 386 from a team of 8 888. However Apple’s core shows a group of highly connected super inventors at the centre. Google’s structure is more dispersed, empowered and networked.

The researcher Bernegger points out that there is more connectivity and collaboration at Apple with the average number of inventors listed on a patent as 4.2 as compared with 2.8 at Google (reported in, Wilson, 2018).

This translates into a ROI (Return On Innovation) of 9 at Apple compared with 4 at Google. It is probably a mistake to draw a broad generalisation out from this as many organisational factors go towards success, but it is nonetheless an interesting study. Leaders must help teams collaborate in the age of intelligence and structure as well as culture matter. **Brain Based Enterprises** explores both issues. As part of my work with world-class musicians I have interviewed a number of music giants from Roberta Flack, to John Mayall and members of Prince, Ozzy Osbourne and Meatloaf’s entourage. These provide valuable insights into the day-to-day management of diversity and more information can be found at “**The Music of Business**”
Team Transparency

The Johari window is a classic model that helps us understand ourselves in concert with others. As such it can usefully be adapted to the world of data, information, knowledge and wisdom. Devised by psychologists Joseph Luft and Harrington Ingham in 1955 the Johari window took its name from their first two names Joe and Harry. Here we apply the model to the question of sharing knowledge within and between teams. As always, nobody does it better that Professor Charles Handy, who offers us an eminently simple way of understanding the Johari window as a house with four rooms. The first room is our open source, the things that we and others know about ourselves, for example, our height, approximate age, LinkedIn profile and so on. The second is our hidden area, the things we know about ourselves but others do not, for example medical history, relationships etc. The third area is our blind area, things that others know about us but we are unaware of, for example, at a trivial level, whether we someone has placed a sticker on our back, whether someone has said something bad about us in private to them and so on. Finally, our unknown or unconscious area, the things that neither we, nor others know about us, for example, our futures.

Julie is able to communicate her thinking directly to others via an interface in her brain that allows people to access her thinking as and when needed. Access is on several levels: an open source region for work associates; a private region for friends and family and a personal region which contains Julie’s thoughts on love, life etc. only accessible with express permission. She has a closed region of her mind, which is totally restricted even to her, although she may ask the interface questions about this area for the purposes of self-discovery and personal development.

The hallmark of intelligent teams will be that the open source area will be maximised for maximum shared value. We have become progressively used to people knowing personal details about us through social media. However, work is normally different as our professional knowledge is sometimes at the heart of our salary. Yet innovation arises from shared knowledge and wisdom. We must therefore find ways to encourage a gainsharing approach to team collaboration if we are to realise the open source dream. Leaders must manage the transparent sharing of information and knowledge for everyone’s advantage.

Summary

1. A harmonious fusion of man, woman and machine offers the best way forward for the age of intelligence. Reaching it will be challenging and it is likely that some industries will resist the onward march of technology. Ultimately Darwin will win and it is a case of adapt or die.

2. Leading intelligent individuals in teams requires a style of leadership that is more directive in terms of setting a direction and rather more facilitative in terms of engaging the team on that journey. Brain based leaders also respect and celebrate the diversity within the team.
3. When facilitating intelligent teams leaders need the full range of facilitation styles from directive to non-directive. The Brain Based Leader masters facilitation to get the best out of the diverse people they lead in teams.

4. In the internet age, team members expect transparency from leaders. At the same time knowledge sharing will be essential to create world-class products and services. This again is a function of good leadership.

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About the Author

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Peter Cook is a unique hybrid of scientist, business academic and musician, blending hard analytical thinking with a creative twist that comes from the arts in his work at Human Dynamics and The Academy of Rock. His books are acclaimed by Professor Charles Handy, Tom Peters and Harvey Goldsmith CBE and he writes for Sir Richard Branson’s Virgin group. Peter was responsible for leading pharmaceutical innovation teams to bring the World’s first treatment for HIV / AIDS and human Insulin into being. He also performs with a variety of music legends including Meatloaf’s singer and Ozzy Osbourne’s guitarist, learning from the boardroom to the boardwalk. Peter brings MBA business thinking into intimate contact with parallel ideas from the worlds of music and science in his work.

For information about Peter Cook’s latest book, Brain Based Enterprises: Harmonising the Head, Heart and Soul of Business, published by Routledge, click here.