

Mann and Montague-Gallagher have amassed more than 350 discussions with people from many different professions who are working towards a sustainable future. In this piece they use their guests' own voices to begin to unpack the attributes that make up these agents of transformation

TOMORROW'S HEROES: RETHINKING

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This work forms the first in an intended series. Tomorrow's Heroes celebrates the work of people actively working towards a sustainable future. The heroes in this work are people the authors have interviewed on "Sustainable Lens: Resilience on Radio" (<http://sustainablelens.org/>).

In Tomorrow's Heroes we present key quotes to explore a sustainable "superpower". These powers are all verb phrases: organising, caring, empathising, systems thinking etc - or in this case "rethinking". How do we go about developing new understandings, or adopting new paradigms? How do we achieve a transformation in thinking?

"Tomorrow's Heroes" is intended as a positive counter the idea that people in 2050 will look back and say "what were they thinking?". The intention is a biodiversity of wisdom, optimism, challenges being faced and things that can or could be done. It is written in the now, looking forward with hope, positivity and empowerment. These are the people that are working – at variety of scales and contexts - for a sustainable future. What can we learn from them so that we might be able to scale that up to the socio-ecological transformation that we really need? The twist of course is that the "super-hero powers" - activities, motivations - are really all things that anyone can do. This goal to identify a pattern for us all to unleash our transformative superpowers.

Dr. Bran Knowles argues that green computing that focuses on saving money through efficiency gains – either of computing systems themselves or behaviour change motivated largely by saving money – is actually doing a disservice to sustainability. She says the focus on individualist rational behaviours appeals to a selfish motivation and we need to flip those frames on their head.

"What we need is a change in mindset. If we stopped and thought about what matters, we could get by with less.

(On gamification in sustainability) It's the goal of game that matters, if we're not directed to improving the environment, you're not really changing anyone's thought patterns that might ultimately lead to long term change. If it's about scoring as many points as you can... that's not going to spill over into additional behavioural change for the cause of the environment.

If you think of people as selfish (a rational actor, selfishly motivated), you can only get so far. Think of people as you do your friends, I know my friends care about many things – they are multifaceted, the more you talk with them about the environment, the more they begin to understand – to care – but we are not taking that approach to the strangers we design for.

Values are malleable, the more we are exposed to "it's good to care", the more likely we are to care that way. The more we pander to the selfish – acting this way is protecting your wallet, this is distracting to the cause. If you make feedback technology that visualises how much money you save by switching off the lights for example, that's just reinforcing the selfish mentality. If you encourage people that the only reason to change their behaviour is to get some financial reward for doing so, then this damages their potential for opting to doing that for other, more altruistic reasons."

Henrik Moller is Professor at the **Otago University Centre for Sustainability**, and the principal investigator at **Ecosystems Consultants**. Henrik describes the conservation estate as a "triumph", but "now we need to turn our attention to the restoration of the wider environment". This is a consequence of the paradigm shift accepting people as part of nature, and part of the contract, and not isolating environment as something outside us.

"We've known what to do to live sustainably for 100s of years, we just don't seem to be able to do it.

[We are] wedded to the belief that we'll heal the planet by the mass actions of lots of small scale local initiatives and people taking responsibility... We have to have just solutions with group agreement that emerges from dialogue with more listening than talking. Some marching on the street is needed, but the main action has to be through consensus about shared future... We need to go beyond forums of conflict... There's got to be a middle ground where NZ society agrees to pay for environmental goods.

Simplifying those production landscapes – both structurally and diversity – we've led to degradation

Resilience is accepting that we're journeying without a roadmap.

Simplifying those production landscapes – both structurally and diversity – we've led to degradation... Sustainable use is harder to achieve than a reserve over the hill somewhere – day to day sustainable living is much harder, it involves so many other dimensions... [It is] about how we interact with each other and how share a space and our love of a space and each other... Feel part of a club by looking after our shared environment... We need to avoid a shootout between different constituents. We could call it pluralism, let's go for "and" rather than "or".

Am I an activist? (*You said you were an activist when you were younger, are you an activist now?*) I hope I'm not dead yet. What is an activist? In the past I used to strut my stuff – yell my opinions, I had no shadow of a doubt that the system didn't have the solution, everything from racist tours to environmental defense society – I was instrumental for taking 300 farmers in breach of discharges into a legal process – so I was very much interested in that forcing, amnesty, homosexual law reform. At the root of this I'm a humanist, it's about respect for people, because in the end that will lead to the big reciprocity of looking after plants and animals. I was so puzzled then as an activist, I had a favourite Amnesty Poster – a typewriter with barbed wire – and I gave it to a friend and went round to his place a few months later and there was my beautiful poster scrawled over the top 'but what about the environment?'. And I thought that's really weird, I had seen the whole thing as a power – power over people, power over environment. They come from the same sour well, where very few lasting solutions will emerge. So now I hope I hope I'm an activist but working in a more subtle and inclusive way, some might even say a more cunning way. But this comes from a changed belief that the solutions are very much more about a patience and slow resolution and dialogue

We're failing conservation-wise, you could point to a lot of things...species declining...but worse we've created this idea that to be a greenie is to be a leftie, radical and not very practical, and not embracing economics. We've created a bit of a prison, the ideal would be if we could all see, not matter what we vote, that we're all seeing the importance of environmental sustainability as sustaining us all, the platform on which we all stand... We need to abandon war talk...if we carry on with fences between ourselves – saying that person is a conservationist and that person isn't, we'll be divided and fall...We're all in this together.

The central paradigm shift is accepting people as part of nature, as part of the contract."

Philippa Brakes works with Whale and Dolphin Conservation (whales.org) where she leads the ethics programme. She is the co-author of *Whales and Dolphins: Cognition, Culture, Conservation and Human Perceptions*.

“As an eleven year old we visited a zoo in Thailand and saw an elephant in chains....and I went on and on about it...eventually my father said, “If you feel so strongly about it, why don't you write to the King of Thailand” so I did. And that was the beginning of my career of feeling that I needed to represent those who don't have a voice.

Whales and dolphins are not well adapted to life in captivity.

[Whales and dolphins are] very much like us: long lived, slow reproducing mammals that just happen to live in the sea. They have complex social groups...but they're very different to us too. Their world is usually one of sound, whereas ours is predominantly one of sight... The spatial scales of other species who can transmit and communicate with each other across ocean basins...we can't help but consider things from our own perspective. If you could talk to your friend who was 10, 15, 20 kilometers away, that makes your sense of scale quite different.

While I'm massively concerned about the conservation and sustainability implications of some of the things that are going on in the modern age, I'm also very concerned about the welfare of some of the individuals... Individual behaviours have population level effects...but it is not really taken into consideration in conservation models. For socially complex mammals the individual is going to be really important in the future... If we focus on populations, knowledge rather than genes becomes the currency if it's influencing fitness.

Things are going in the right direction with whaling, but there's still a lot more to do. They're quite diminished from 150 years ago, so we need to be looking at protecting their environments better rather than looking at how many we can sustainably remove from populations.

(On a Minke whale from the area targeted by Japan's whalers being found near Australia's Great Barrier Reef) It's important that we don't get into the game of saying “they're our whales..no they're our whales we can do with them what we like”. The whales are their own entity, they should be allowed to go about their business unharassed... The scientific evidence is such that it can be argued that some whale and dolphin species qualify on the basis of personhood.

We rightly have rights for my 4 year old daughter, yet we wouldn't say here decision making is at the level of qualifying her as upstanding member of our society yet...just because an individual is granted rights doesn't mean that they have associated responsibility. This comes up as a confusion ‘does that mean that Orcas shouldn't hunt Hector's dolphins?’. Personhood is a legal term based on certain traits – communication, cognition, meta-cognition, all of those aspects – no-one wants to call them people. The legal recognition qualifies them to not suffer psychologically, or physical trauma for any extended period. The right not to be subject to abuses.”

David McKay is a researcher at University of Otago's CSAFE. His recently completed PhD thesis considers the relationships between Māori cultural perspectives and environmental education policy or practice.

“As a science and technology based society we tend to assume that technology can solve everything and tend to overlook that we are a biological species and part of the environment rather than separate to it

Environmental Education, Education for Sustainability, it doesn't matter what you call it, it's common sense... What does make sense is learning for survival and continuance with integrity.

There's nothing in the (environmental education) literature that anything like matches up with the “old ways”... People interpret the curriculum in a western point of view rather than a holistic view... could we come up with a multi-cultural paradigm?

For many people the environment is something magical, out there, away from where we are. This totally overlooks that not only are we – you and me – *in* the environment right now, we *are* the environment.

Engagement and connection is what's missing... We haven't lost the connection...we've forgotten it. We just forgotten that we are part of all that is. we haven't lost anything, we're not disconnected, we've forgotten what we are... We are inextricably interconnected, interrelated and interdependent on all that is... We lose sight of this simplicity – and that's what we need to rediscover.

Elders tend to speak less, but more cryptically. When they do speak it's a good idea to listen. It is part of multi-culture that it is cryptic, there are levels of understanding of the same message. Education is about readiness, if you are up to getting the message then so be it, if you're not then nothing is wasted... People coming from cooperative societies (the marae)... walking with feet very firmly in both worlds, and that's something awesome.

A tohunga said to me "you pakeha fellas, You measure the readiness of our young people by them giving the right answer – what the system wants – we measure readiness by our young people by them asking the right questions, and that is a different thing entirely". A very important to learning in traditional Māori ways is critical thinking and individual identity, and having the mana and self confidence to be yourself, and stand to your rights and ask those questions and if it doesn't match up, to disagree.

Living and learning *as* the environment or *as* part of, rather than *in* the environment, *about* the environment or even *for* the environment. [David's interviewees were] aghast at the thought that anyone could think the other way – how could you not understand that you are related to everything – we are all stardust.

In many cultural worlds time has no meaning...but timing is everything.

Learning is about actualising the potential of being the best of the best of who you can be, and because it is about being the best of who you can be, and we can never be the same, we can never be taught the same things. In a crisis we all know something a bit different, we all know each others' strengths and we can all work together very strongly...makes a very strong and resilient community.'

Dolphin Research Australia's **Dr Liz Hawkins and Isabella Keski-Franti** talked about research, education and Indigenous Management Frameworks.

"As well as academic performance, students have to have character strength, they have to have a feeling of citizenship – they have to belong... Students have to remember that they belong in the ecosystem... Children are very curious, they want to know what is around them, it's a matter of providing them with opportunities.

(On kids fund raising to adopt a dolphin) It's the interconnectedness of everything, that makes them understand the importance of saving an animal, that even though they don't have a direct connection but they are doing something – this is empowering them in becoming a citizen – an active citizen in their community.

Everybody can make the changes, everybody has a right to be different... There is a role for all of us... Making the change through connecting with children – helping them shift the status quo of our society... To talk about an inter-generational future, we need to connect with our children and help them make connections with their ecosystem... We need to be part of the ecosystems and working together:

We create our world, our reality, dependent on the changes we make... Every little step, every little change that you make is huge. So don't feel overwhelmed by the news or what is happening around you. Focus on every little change that you make on a daily basis.

If I am making the change through connecting with children, helping them shift the status quo of our society – the focus inter-generationally speaking, for the families and our future – I see this as an activism.”

Prof Susan Krumdieck is developing Transition Engineering at the University of Canterbury. We talk about green energy mythologies, transition engineering of complex systems, growing up in Colorado, and how her son’s persistent questioning led her to look for ways or making real change.

“Ask 100 people what changed 100 years ago that made a profound change, not one would say “safety engineering”.

At the turn of the last Century, our factories, mines and transport were engineered in a way that they were extremely successful for the owners, investors making huge amounts of money...but people were dying or being maimed at rates we can’t contemplate today...so there was a huge change over 40-50 years – that was the impact of safety engineering...The change was exponential, so huge at the beginning – so simply think about what’s wrong and work on that.

People can adapt to whatever situation they’re in, and they can do that if they have the ability to see what’s happening, understand what’s happening, trust one another and work together on it.

My concern is what we are doing that is not sustainable, and changing that – transition engineering.

Mechanical engineers have made these big systems work really well, but they have not been given the task of winding them down in a way that is sustainable... How engineering interacts with people is at the core of sustainability... The conundrum, that if you are going to engineer your systems even more, so that you can overcome bad behaviour – you’ve introduced more reliance on the engineered system instead of reliance on people thinking.

Green energy myths give false hope.

Green energy mythologies – may be as important as mythologies have always been for people – that we have a belief in our own progress and in our own development, and we need stories and mythologies that support that belief. But the facts tell us we are in trouble... We tell ourselves these big stories – and then start to believe them.

Our development, our progress – that we’ve been so successful at is a trap, and a bit suicidal – a lot suicidal – and we don’t know how to deal with that except to believe more in the story. The party we’ve been having – we’ve come to a trough that is bottomless, an all-you-can-eat banquet with a free returns card, and we’ve come to think that’s how things are, but we gotten quite obese – it’s not good for us, it will kill us, and yet we’re afraid of change... We know continued growth is doomed, so we’ve shifted our growth over to the green category – it’s still doomed, the miracle green energy is a myth... Basically anything that anybody sends you with a big “Yay!” solar roads, house batteries... , your green energy myth radar should just ping.

Solar panels... something that says to people something about you that you will probably be quite smug about... it will fulfil an emotional need that you have, but what I call it is green bling – you didn’t need it, it didn’t change your circumstances or add value to your life. It is decoration for your house, not a legitimate part of the energy system. But something you couldn’t see – perhaps insulation – would make so much more difference... If we really want to talk about the route to sustainability, what we really have to talk about is what is not sustainable – that’s it.

We’ll never really be sustainable. All we can do is look at the most stupid things we do, and tell the engineers that are making them “thank you very much, but we want something that isn’t that bad, we want you to rethink this.”... Anything that is disposable, not reusable, not returnable – all of those we’re engineered that way on purpose, we can change that.

Engineering has to be where we start with these changes... Somebody has to actually do things that changes things – transition engineering... Adaptive change have to be engineered – it has to be done on purpose... Simple solutions might be the answer; but they have to be real... I wish solar, wind, hydrogen were miracle solutions, but they're not. If I can help any engineer not waste the ten years I wasted on Hydrogen, then that gets us closer to real change.

The way we use energy has become so embedded in our social structure and our belief system – we're talking a fundamental change in our shared cultural values.

It is possible to do change- to take on what seemed like impossible situations. We've done it before in safety engineering and environmental engineering... You can't solve the world in one go, so frame the problem – every engineered system can be re-engineered... We've reached a point where our progress, our own technological success is indeed the biggest threat to us.

When we make a big mess we need the engineering field to look at itself and say "we can do better than this"... Everything around you is an engineered system – start demanding of the engineers to change things... You are in a system that is engineered to work beautifully, it is also self destructive, it is also designed to fail... Turn around and look at the people who designed these systems and say "I hope you're busy figuring out how to change things".

We need the emergence of transition engineering just like we needed safety engineering, natural hazard engineering, environmental engineering.

I am pushing the comfort zone of the engineering professional to challenge them to take on this responsibility. They say "we already do sustainability engineering – recycling systems and so on" but this is a bolt-on to unsustainable systems. We need engineering to boldly take on the big unsustainable systems... Transition is about change, about changing engineering, and if you can change engineering, you can change the world.

My son said "Mom, you have to do something, if something doesn't change then it's going to be really bad, you have to figure out how to change things".

[People need to] stay with the math and science, especially the young women. We need people who understand that it's complex systems but you can change them – you just have to think in systemic ways – and if we could get women to be half of the tiny percentage of people who are engineers, we'd we well on our way. Do not accept anything less than a global perspective, learn what is known but do not accept that we have to cook this planet as part of human requirements."

Pella Thiel an ecologist and change agent who chairs the board of the Transition Network Sweden, Omställningsnätverket, and is also working with values for transition within the Common Cause network. She is also facilitating End Ecocide Sweden. Pella works to create meeting places that build the trust in the possibility of the big changes necessary for a sustainable, just and meaningful world.

"Addressing ecocide is a prerequisite – we can't have thriving local communities if we don't put an end to the destruction being done as an everyday thing... Our current system...we think it's OK to destroy living systems. Ecocide is mass damage and destruction of ecosystems where people and other organisms live. And what we're working on [is an] international law against ecocide.

The movement is to have Ecocide recognised by the Rome Statute...the most severe crimes – crimes against humanity, genocide, war crimes - they are tried in the international court. This will have to be a process as we find out together; what do we accept and not accept. Today as a society we do accept mass damage of nature – and we

know where that is taking us, we're well into the 6th mass extinction.

Our collective actions are taking us to a place that doesn't benefit any of us. We have to change that, and that's not easy, but if we don't begin...

Transition, most horrible things and most beautiful things happen at the same time...when we actually say this has to change. if you are an addict, it is not until you realise I can be alive [or] I can be dead, and this is the choice I have to make.

Do we have to convince everybody? This is a stress – “we have to reach everybody, we have to be palatable enough for the middle class, everybody needs to be in this change”, which is true to a certain degree, but from what we know about big shifts in complex systems, they don't happen that way – that suddenly many people do something different, on the contrary, they happen because a small amount of individuals do things from a very different logic. Maybe 5%, maybe even less because we are so interconnected – if a few people can spread a message that many other people resonate with...maybe even fewer than 5% to tip the system. This path we are on is not going to take us any further; so we get to choose the path we want. So then the question is options for change – mostly the transition message that we can deal with this together... We have invested heavily in the current picture, and it will be difficult to leave...but we can make money from other things, and that money will be serving us better: Serving the complex we live in much better; much healthier; less stressful and less lonely than we are today.

Values change and shift all the time. If we what change, we need to be conscious of values... Values influence everything we do, but we are usually unaware of them. We don't usually notice societal values, what values are strengthened in our society – what is perceived as desirable, normal and important in a society.

Extrinsic values: if you get a reward for what you do, how people see you, material wealth, status, power...and then there are intrinsic values - they are more related to the context you are in: relationship to nature, friends and family, social justice, equality, and things such as creativity... For us to be able to act on bigger than self issues, we have to act on intrinsic values – so they have to be the strong ones.

I caution against good and bad values, but its normative in the way that if want to move in the direction that is more collective – and just people, but also taking into account the interests of other beings, even landscapes, then we have to be focussing on the intrinsic values. Selfish, rational economic man...that's really strange thinking, that we could build a society that is good for all based on the interests of individuals that don't care about that whole society. That's a sad picture of people being very very small – and we aren't that small. We're big, we have big hearts if we can believe in those big hearts...When you appeal to the rational economic man, you strengthen those values, prime those values, and the intrinsic ones become weaker. If I tell you that installing these solar panels will be cheaper; then you become less interested in unity with nature, social justice – a beautiful world. And what we know is that a beautiful world, thinking and action for a sustainable future rests on those intrinsic values.

Transition needs a whole shift in thinking, and by appealing to your economic gain from that, you will undermine and cause collateral damage to those intrinsic values and weaken your ability to participate in the transition.

We need to go even deeper than an overthrow of capitalism. Using money as a measurement is really shallow. We measure money, but that's not the interesting stuff – people are interested in healthy relationships with politicians, neighbours, their children's teachers, healthy food, beautiful setting – those are the things we should strive for: The best things in life, money can't buy. We know that, so why do we keep focussing on money?"