

Spring Session 2022

All Change: Design and Science in a time of Crisis

Collaborative Workshop  
V&A London, March 28th 2022

A collaboration between  
The 1851 Royal Commission  
and  
The Faculty of Royal Designers for Industry







All Change: Design and Science in a time of Crisis

Collaborative Workshop:  
28th March 2022 at V&A, London

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## INTRODUCTION

This report covers recent emergent activity arising from the express desire of the 1851 Royal Commission to develop its role in promoting the influence of good design.

Out of that desire came a fledgling collaboration between the 1851 and the Royal Designers for Industry, which forms the substance of this paper.

Included from this page are the background, collaborations and shared planning discussions which followed.

From page 10 is a step-by-step account of “All Change”, an “intentional collision” between designers, scientists and others held jointly at the V&A in March 2022.

From page 21, in the spirit of immersion in the scope of the challenge, we include a commissioned piece by Max Fraser, embedded for the purpose in the collaborative discussions at the V&A.

Photos of the event by Theo Wood are included to jog memories, and to whet the appetite for next time.

For those interested, or pressed for time, “Next steps” are detailed on page 36.

## ORIGIN

At its Strategy Retreat in Cowes on 21st June 2021, the 1851 Royal Commission discussed its role in promoting the influence of Good Design. This included the possibility of interventions to increase the means of STEM education, with the aim of increasing and diversifying those entering STEM careers.

It was agreed the Commission would approach the Royal Designers for Industry (RDI's) to discuss an initiative related to the promotion of the influence of design for good. How that conversation might evolve to include interventions in STEM, STEAM (STEM+Art) and DSTEM (Design+STEM) was left open.

Acknowledging that many others are working in this space, the Commission agreed to look for fertile ground that would complement those efforts while being clearly identifiable.



THE PROMOTION OF GOOD DESIGN  
(extract from 1851 retreat papers)

*“The promotion of good design reflects the mission to extend the influence of Art on productive industry. Until recently this has been achieved through the annual Industrial Design Studentship awards and the biennial Design Fellowship.*

*The adoption of the Sir Misha Black Awards has raised our profile in the world of design education and it is clear from conversations with members of the IET’s new Design Hub and the engineering departments at a number of universities that realisation is growing that the teaching of design is an important element of engineering degrees.*

*The question to address is how the Commission might best contribute to this movement.”*

POTENTIAL STEM/STEAM/DSTEM  
INTERVENTIONS (extract from 1851 retreat)

*“It is reported (CaSE 2014) that there is a 40,000 annual shortfall of STEM skilled students entering the UK workforce. Encouraging more pupils to study STEM subjects and pursue STEM careers is an urgent priority for the UK.*

*What might work?*

*Relatively few interventions have been independently evaluated at scale. Even where this has been done, evaluation often shows at best some impact on interest or aspiration not achievement or progress towards a STEM career (and the latter cannot reliably be inferred from the former).*

*Taking into account the views of sector experts, the RAEng in a 2016 report suggested the following as areas where current provision is most patchy and interventions could plausibly have a real impact on the number of people pursuing STEM careers:*

- Influencing the perceptions of young people towards STEM Careers – in particular, by influencing the views of their parents, carers and teachers.*
- Improving the quality and confidence of*

*STEM teachers and teaching, particularly in primary schools.*

- Addressing under-representation of specific groups within STEM through interventions that boost attainment and aspiration.*
- Promoting practical pathways into STEM careers through FE / apprenticeships and improving teaching in the FE sector.*
- Enhancing careers advice and guidance at all levels, including employer engagement / availability of work experience and industry placements.”*



## ALIGNMENT OF THE AIMS OF THE 1851 AND THE RDI's

There is a helpful alignment of the purposes of the two organisations.

The Purpose of the 1851 Royal Commission is:

*“To increase the means of industrial education and extend the influence of science and art upon productive industry.”*

The Purpose of the Faculty of Royal Designers for Industry is:

*“To recognise individuals who have demonstrated “sustained design excellence, work of aesthetic value and significant benefit to society”...with a measurable impact.”*

## THE COMPLEMENTARY QUALITIES OF THE ROYAL DESIGNERS:

The contextual nature of the initiative is brought into focus by the Selection Criteria for an RSA Royal Designer for Industry. They give a succinct and illuminating summary of the compass of excellent contemporary designers:

*a) An RSA Royal Designer for Industry is an individual who can demonstrate the highest quality of design and measurable impact.*

*b) “Highest quality design” is demonstrated by the following:*

- *Sustained Excellence*
- *Design quality*
- *Ingenuity and creativity in solutions*
- *Sensitivity and empathy to users and the context of use*

- *Positive social change*

*c) “Measurable impact” is demonstrated by:*

- *Public awareness and acclaim*
- *Significant impact on public culture and heritage*
- *Improvement of quality of life*
- *Advancement in understanding*
- *Innovation*
- *Commercial intelligence*

RDI's encompass practitioners whose impact is to bring excellent design to “society”. Society now includes population growth and global industrialisation as well as climate, pandemic and conflict resilience. Several RDI's are specialists in environmental and sustainable design, and specifically the climate emergency and net zero.

Although RDI is an individual honour, over the years many motivated RDI's have determined to “putting something back” through designerly interactions singly or in groups.





Of particular interest to the collaborative basis for this initiative are the many examples of Royal Designers working across disciplines and between the arts and sciences, both in practice and in related extra-curricular lives.

These include the mentoring of industrial design students, as judges in the long-running RSA's Student Design Awards, through the RDInsights podcasts series.

Royal Designers have also from time-to-time shared experiential learning through its RDI Summer School, set up to bring together early and mid-career designers and users of design with wildcards including economists, soldiers, doctors, musicians, philosophers....



Previous catalytic work by the Royal Designers through their Summer School: Dartington Hall





## JOINT PLANNING SESSIONS OF 1851 AND RDI'S:

Sessions were held, on 28th September 2021 attended by Tom Lloyd RDI, Mark Major RDI, Nigel Williams and Chris Wise RDI; and on 18th November 2021 attended by Professor Dame Kay Davies, Johanna Gibbons RDI, Tom Lloyd RDI, Mark Major RDI, Nigel Williams and Chris Wise RDI

*As a result, the 1851 and the RDI's agreed to work together on a collaborative project exploring ways to strengthen the relationship between designers and scientists.*

*Both the 1851 and the RDI's would engage with their respective networks, especially those working at the leading edge of their field. Such a collaboration would aim to be an exemplar.*

The initiative would begin with a Co-Design Workshop to frame a longer term agenda from emerging “seed” themes.

The workshop would have a cohort of creative and innovative participants made up of young designers, RDIs, 1851 Science and Industrial Design Fellows and Commissioners plus some carefully chosen ‘wildcards’. The workshop would be recorded and shared as a legacy as well as a stimulus card for potential new collaborations, shared activities or research.

## WORKSHOP PLANNING: SEED THEMES

Feeding into the event were stimuli and ideas discussed by the working group, which included:

- Collaboration, fellowship across disciplines, use of the power of our shared networks
- Seeking a common language, through shared storytelling and mutual interest, to share understanding across the two cultures
- Building on the strong link between Natural History, Science, Arts, Music across the 1851 Estate and its Fellows
- Regenerative: net-positive; working towards a new discipline of planetary health
- To be ecocentric not egocentric
- To consider if and how to set up an ongoing meeting ground.
- To those fearful of the future, to provide motivation through a belief in the purpose, through autonomy, and through the possibility to achieve mastery.
- To work to bring design and science closer together through “*Synthesis out of analysis*” (cf Jacob Bronowski in *The Ascent of Man*)

## WORKSHOP PLANNING: POTENTIAL OUTCOMES

- Outcomes would emerge out of the need to harness the exponential power of scientific research to leverage design, and design to leverage science.
- The underpinning aim is cross-fertilisation: to help inform each other and seek out fledgling possibilities; to help inform the 1851's calls for applications for scientific and technology research; to stimulate designers with potential access to, and understanding of, leading scientists and research; and vice versa.
- Specific targeted pairings enabled by the 1851 and the RDI's may enhance programmes in which designers and the scientific/technology community can share projects together.
- A regular collaborative residential summer school has also been warmly suggested, perhaps building on the RDI Summer School model. This could be developed either to tie in with the outcome of the workshop or as a separate cultural-crossover initiative.



## WORKSHOP PLANNING: CO-DESIGN FORMAT

It was agreed the workshop would be planned in open format, with simple ground rules. There would be no major imposition beyond the exploration of possibilities.

V&A Director Tristram Hunt generously made the V&A available for the workshop.

To broaden impact and opportunity, a journalist and a photographer were commissioned to record activities for future outreach.

## FUNDING

The 1851 agreed to provide reasonable seed funding at this stage, subject to the normal sanity checks by the board.

## WORKSHOP PLANNING: COHORT

A cohort of about 50 participants was selected, as far as possible diverse in age, background and discipline:

- 12 young designers
- 10 senior Designers
- 12 1851 award holders
- 6 senior scientists
- 10 “wildcards” representing the diversity of those influenced by design as users or thought leaders: Educators, politicians, musicians, financiers, consumers, environmentalists, Misha Black winners

To bring diversity and balance opportunity, RDI's and the 1851 agreed to pool potential participants before finalising the cohort.

## THE SHARED ROLE OF 1851 AND THE RDI'S AS CATALYST

As co-hosts, facilitators and critical friends, the role of the 1851 Commission and the RDI's therefore became:

- to search out the brightest minds, without preference, to be the source “elements”
- to set up the workshop to enable the participants to co-design their own direction of travel
- to act as a “catalyst”
- to use the V&A as a “crucible” within which the potential and power of the interactions between design and science are revealed and challenged
- to enable our shared future to be the source of “energy” which drives the workshop and any emerging programme
- to run the event with generosity, in the hope of inspiring moments of “epiphany”.
- to assist in the dissemination of the event and its outcome, online or in person.





WORKSHOP PLANNING: DETAILED ARRANGEMENTS

## Spring Session 2022

### All Change: Design and Science in a time of Crisis

The 1851 Royal Commission and the Faculty of Royal Designers are looking forward to seeing you at the V&A on 28 March 2022

"A crisis only becomes a turning point when it becomes a 'critical juncture' – one of those rare moments when institutions, norms and rules are unfixed, new possibilities for future development open up, new ideas gain currency and social and political forces emerge to take them forward" (Charlie Leadbetter, Dec 2020)

In the face of our wicked problems, how can we harness, exponentially, the power of science to leverage design, and design to leverage science, so designers and scientists can collaborate better for the benefit of the planet.

We have inherited CP Snow's two cultures of art and science, a distinction that is not always useful. The aim of our event is to recognize that and work together to co-design what sort of design/science/planet collaboration might be beneficial.... fledgling activities for which we need a common language, shared storytelling, empathy, and shared imagination of what's possible.

The evening is hosted jointly by the Royal Designers and the 1851 Royal Commission, to explore collaboration between science and design in a time of crisis. Attended by 50 (or so) designers and scientists, and a few wildcards to inject contrary life experience and to provide challenge, the evening will invite provocation, sharing, proposition and reflection. Those attending represent a cross-section significant for all our futures...creativity, rigour, insight, precedent, empathy, collaboration, experiment, judgement.... We hope the V&A can be a crucible for interaction, and that you will be stimulated by the surroundings and one another.

#### Programme

3.30	Arrive	Main Entrance
4.00	Welcome	Raphael Court
4.15	Short talks	Raphael Court
4.30	Safari	The Galleries
5.15	Tea	Main Entrance
6.00	Short talks	Raphael Court
6.20	Safari	The Galleries
7.00	Plenary session	Raphael Court
8.00	Drink	Main Entrance
9.00	Close	

#### Getting there

Please make your way to the V&A's main entrance hall on March 28th at 3.30 for a prompt start at 4pm. Location and travel details can be found here: <https://www.vam.ac.uk/info/plan-your-visit>.



Invitation and timetable for participants

## Spring Session 2022

### All Change: Design and Science in a time of Crisis

#### Notes for speakers

Thank you for agreeing to give a short "provocation". There are two relays of speakers.

The first relay contains 4 x 6 minute provocations, broadly around cultural achievement and learning. Here are some subjects to cut against...please adapt very freely:

#### "Imagination leaves a lot to Reality"

Tristram Hunt	The V&A as witness
Roger Kneebone	Science and well-being
Birgit Mager	Design and social benefit
Dan Epstein	Responsibility at all scales

The second relay contains 3 x 6 minute provocations, broadly more propositional:

#### "Reality leaves a lot to the Imagination"

Indy Johar	Long-termism
Sarisher Mann	Values and "Growth"
Michael Pawlyn	Symbiogenesis

You will be unmiked, in the Raphael Court, voice only as there are no presentation screens. Please speak for no more than 6 minutes and pass the baton to the next speaker in good time. If you would like to come a little early, please let Kat know at the 1851 Royal Commission.

Tom Lloyd and I would be happy to discuss your thoughts with you if you have any questions.

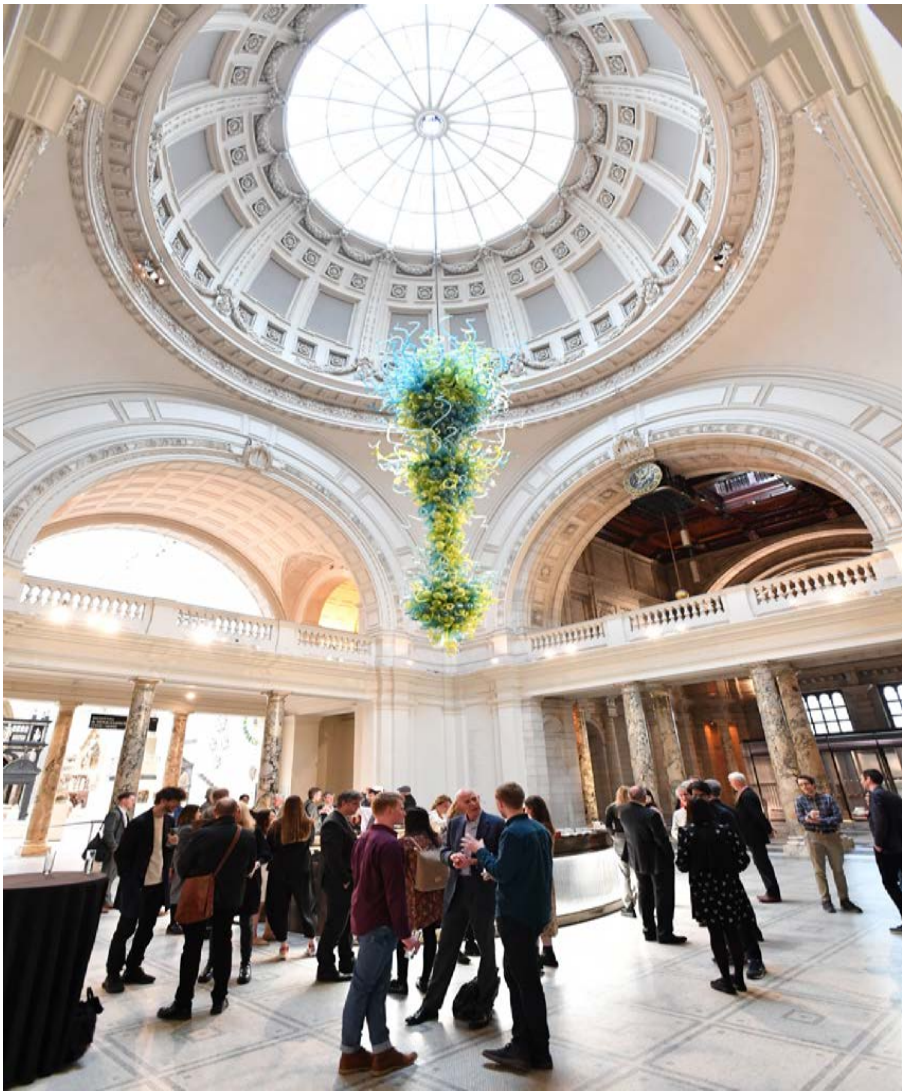
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As a linking thread, here is Charlie Leadbeater, Dec 2020, on turning points, ideas and the context for transformational change:

*"A crisis only becomes a turning point when it becomes a 'critical juncture' – one of those rare moments when institutions, norms and rules are unfixed, new possibilities for future development open up, new ideas gain currency and social and political forces emerge to take them forward"*



Provocations: Speaker Notes



Reception in V&A Dome



## WORKSHOP PARTICIPANTS AND DISCIPLINE COVERAGE

GROUP	Senior Designers	Emerging Designers	Senior Scientists	Emerging Scientists	Wildcards
Group 1	Charlie Paton - Inventor	Douglas A. J. Brion - 3d robotic printing	Alistair Griffiths - RHS science	Hannah S Wauchope - conservation	Birgit Mager - service design
	Jo da Silva - Resilience	Bisila Noha - ceramics		Aden Forrow - mathematician	
Group 2	Luke Pearson - product	Daniel Karaj - computer science	John Wood - neurobiology	Maral Bayaraa - earth observation	Dan Epstein - regen development
		Tahira Resalat - illustrator		Keith Andrews - organic chemistry	Johanna Agerman Ross - V&A curator
Group 3	Mark Major - Lighting	Milo Mcloughlin-Greening - industrial	Georgia Mackenzie - biomed	Sophie Duong - ballistic materials	Nicholas Hart - L&D coach
	Seb Cox - furniture	Leanne Young - digital creative		Kyle Bowman - microbiology	Joanna Choukeir - social design
Group 4	Morag Myerscough - community	Sandeep Hoonjan - digital creative	Neil Champness - nanoscience	Tom Fleming - pharma entrepreneur	Sarisher Mann - economist
	Chris Wise - engineering	Kerri Cooper - doctor and surgical		Beth Mortimer - animal vibration	Nick de Leon - knowledge exchange
Group 5	Indy Johar - social systems	Orlando Gibbons - structures	Eleanor Stride - nanomaterials	Tessa Young - protein chemistry	Minnie Moll - design council
		Natalie Kerres - wearable technology		Richard Bowman - optical inst	Tristram Hunt - Politician historian
Group 6	Marion Deuchars - illustrator	Samuel Jones - regen industrial design	Roger Kneebone - surgical education	Edward Williamson - missile systems	Michael Pawlyn - regen design
	Tom Lloyd - product	Kristi Minchin		Laurence Devesse - forensic genetics	





## AT THE WORKSHOP: INTRODUCTION

by Tom Lloyd, Master of the Royal Designers:

*Thank you for joining us at the V&A for a few hours of exploration and enquiry in the service of a more just and regenerative future.*

*This evening is a collaboration between The Faculty and The Royal Commission for 1851.*

*The context of our meeting today is the growing urgency in response to both climate breakdown and rampant inequity into our world, which it seems becomes ever more fragile. And the provocation is to consider intensely the interface between the discipline of design in all its forms*

*and science in all its forms and ask how we can act together with more purpose in response to this urgency. Our practice and methodology are often strikingly different, but we thrive in the presence of each other.*

*The meeting point of art and science is as old as the hills, and what better place to reflect on this, than here at the V&A, a place that celebrates science, innovation, craft, and design through a lens that is global in its reach. We have chosen to be here, not only to enjoy the extraordinary on display, but because we want to use the collection as a positive trigger in shaping our collective futures. The work in the V&A's*

*collection celebrates undeniable ingenuity and innovation, but we reflect that this was often at the expense of people and planet, depleted and stressed in the service of 'wealth creation'.*

*Of course, the work in this collection was not knowingly created in the context of climate breakdown, but the vocabulary of our times is different. Circularity, regenerative futures, system thinking, net positive are ideas in their infancy in the service of justice and equality and a future of re-growth and renewal.*

*Our world of Covid-19, Climate breakdown, Ukraine, post-truth, is a place of jeopardy and anxiety. However, there has long been a link between crisis and positive change. Wartime stimulates and exposes new and positive social structures and bonds that are unseen when we are at peace. The writer, Charles Leadbeater talks brilliantly about the petri-dish of crisis and how innovation thrives in instability through new currency of; shared focus, urgent timescales, the need for scale, repurposing resources, greater tolerance of failure and openness for collaboration.*

### *Cognitive Diversity*

*In his recent book Rebel Ideas, Matthew Syed explores the concept of Cognitive Diversity as a call to arms for different minds to work together*



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*in response to complex problems. So here we are, an intentional collision of cultures between the worlds of design and science.*

### *Vocabulary*

*I am particularly interested in how the understanding of vocabulary can unlock an understanding of ourselves and of what we do. In preparation for this event, I was exploring the connection between the word culture and the word cultivate. Both have roots 'literally' in growth but are understood quite differently by science and design. It feels like the connective tissue of what we do is closer than we think.*

### *Radical Improvisation*

*I want to end with another quote by Charles Leadbeater in his call for Radical Improvisation.*

*'A crisis forces people to see the world in a different way because it ruptures the assumptions on which everyday life proceeds and so creates a doorway into a different kind of world, one in which people can improvise solutions inspired by generosity and empathy, goodwill and common endeavour, resilience and resourcefulness often lacking in normal times'.*

### *Co-creation*

*In the spirit of true co-creation, we are not over defining the process and outcomes of the*

*interactions between you all. Interactions are as important any idea of solution making. We want to leverage this environment to facilitate debate and enquiry into our past, our present and our future.*

*Gathered here is a mix of those emerging from science and those from design and others who we think can contribute by coming from neither.*

*The format is in 3 parts:*

*In part 1, we are inviting everyone, in groups of 6, to use the collections to think about the past, and the journey to where we are today. What are the linkages between science and design in those galleries, between invention and synthesis between subjectivity and objectivity? What are costs and benefits of those innovations?*

*In part 2, we want to revisit the galleries to understand how we might forge a new future, where the value proposition of growth is converted from economic growth to nature re-growth, or any other propositions that emerge from the groups??*

*In part 3, we will come together to share thoughts & stories.*





## AT THE WORKSHOP: CHALLENGE

Chris Wise, 1851 Royal Commissioner and past Master of the Royal Designers:

*How can design and science collaborate exponentially?*

*A little while ago I gave a keynote talk at a scientific symposium at Cambridge....400 eminent scientists studying everything from nanotech to bio-this and genetic-that, and a man designing molecular motors powered by light...(actually, he won the Nobel Prize for that...later I asked him over dinner what the nanomotors would be used for...he said, as a scientist, he didn't know).*

*Anyway, I was speaking as a designer in a room full of scientists, so I gave a talk called "What can we learn from Stradivarius?" How can someone craft simple natural materials like spruce, maple, willow into an instrument that performs so perfectly, that sounds so beautiful, whose physical and emotional impact lasts so long? What Jacob Bronowski calls "the architecture of nature". I warbled on for a bit about how we used Strad's principles to design some of our projects like the 2012 Velodrome (they clapped) and the Millennium Bridge... (everyone was rather quiet).*

*Then, because I was talking about trying to design things with exceptional performance, I told a story about designs we had done for a Perfect Steel Beam that could be made, saving 40% of the steel in a traditional I beam.*

*I think I said that if every beam around the world was one of these perfect beams, the amount of embodied energy saved each year would be enough to boil 700 cups of tea for every single person on the planet. The idea was met with great enthusiasm by industry giants who make rolling mills and sell steel beams. We had some nice meetings and everyone went away to consult and talk again.*

*But after a few months, I received a note saying the board had decided they wouldn't be adopting the Perfect Beam, because, and there is no polite way to put this, their shareholders had simply realised that they would sell less steel..... Illogical as it seems to many a sane person on a planetary scale, companies didn't have to justify their decision to anyone except their own shareholders.*

*So this isn't just a problem of design, or science, but a systemic one, a contextual one, a problem of cultural norms, with strong business undertones.*





*The artificial construct we humans had invented to capitalise on trade and the industrial revolution was now preventing us taking steps to deal with their unintended consequences.*

*Two things happened in the tea break after my talk. The sponsor of the symposium, a venture capitalist, asked me if the story about the perfect beam was true: I said “Yes” and he said “Good, because while you were talking I was on the phone to China, and they are very interested in its potential”.*

*And then a group of scientists came up and said...”How do you do that stuff? How do you take all those complex and conflicting issues and distil them all down to a single solution and put it on planet Earth.” I said, “well that’s my life... as a designer, as an engineer”. They said: “To us, as scientists, it seems like Magic”.*

*Jacob Bronowski explained this much better than me in the Ascent of Man, when he said:*

*“How can people take a Dead Heap of Stones which is not a cathedral, and turn it into a cathedral by exploiting the natural forces of gravity - the way the stone was laid, the brilliant invention of flying buttresses and the arch, and so on.*

*They created a structure out of the analysis of nature into this superb synthesis.”*

*This phrase captures it perfectly:*

*Science at its heart is “the analysis of nature”:*

*Design at its heart is a “superb synthesis.”*

*You can’t “science” a cathedral any more than you can “design” the laws of gravity.*

*But if you put the science and design together, exponentially, human beings can turn a dead heap of stones into a cathedral.*

*And that is Magic, and that is what we are trying to conjure up together this evening.*





## WORKSHOP:

### PARTICIPANT BRIEFING FOR PART 1:

*Today is about co-design...none of us yet know where our priorities lie, but we hope to find out together:*

*So, what is our motivation for today? What Need are we trying to meet?*

*Like Stradivarius, and like the cathedral makers, we have our own materials: instead of a dead heap of stones we have a live “Heap of Brains”... in the heads of everyone here.*

*What can we make out of our Heap of Brains?...*

*Perhaps some “Unheard-of-Machine”, designed to make the absolute best of them? But do we know what we need such a metaphorical “machine” to do?*

*Need is a conditional thing: short or long term, in the interests of the many or just a few, responsive to the environment or designed to manipulate the environment to our ends.... with winners and losers. The needs of the shareholders of the steel companies to sell more steel for more profit are not the same as the needs of the planet to live in equilibrium with its resources.*

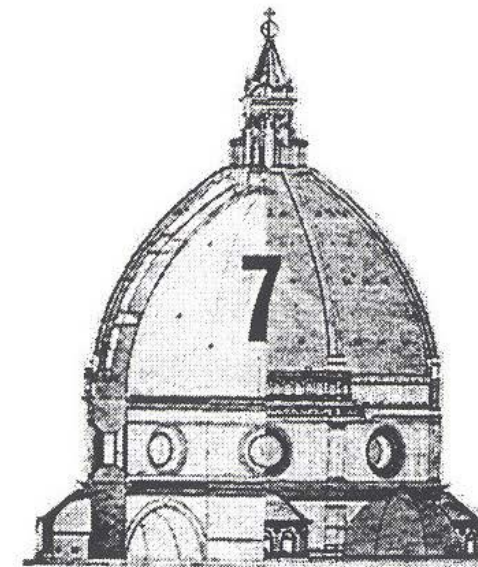
*This is our first task: to strip away the baggage, labels, learned behaviours, to damn convention, blast vested interests, and to try to get to first principles...What is our “analysis of nature”.... what is it that we really need?*

*For inspiration, we have some help: We have this room, the Raphael Court, and we also have four nearby galleries and everything in them: The Islamic; the Design; The British, and the Cast Court. These galleries reflect cultural achievements over millennia that respond to the cultural or political imperative of the day.*

*In them, we are invited to look for parallels, analogues, lessons, circumstances, stories, morality tales, deadly sins, cardinal virtues, some moment of insight from the past which gives us a clue to the future:*

*When people created these intrinsically beautiful things, what need were they trying to meet? And why?*

*If we can discover that, perhaps we can create our own “Unheard-of Machine” out of our live “Heap of Brains”?*



### *Some Unheard-of Machine*

*I am accustomed, most of all at night, when the agitation of my soul fills me with cares, and I seek relief from these bitter worries and sad thoughts, to think about and construct in my mind some unheard-of machine to move and carry weights, making it possible to create great and wonderful things.*

*(Filippo Brunelleschi C15th)*





## WORKSHOP “PROVOCATIONS” FOR PART 1

The Part 1 “Cultural Safari” was prefaced by 4 short “provocations”, focussed on around culture and context.

The theme for these provocations was:

*“Imagination leaves a lot to Reality”*

Speakers were given a linking thread by Charlie Leadbeater, Dec 2020, on turning points, ideas and the context for transformational change:

*“A crisis only becomes a turning point when it becomes a ‘critical juncture’ – one of those rare moments when institutions, norms and rules are unfixed, new possibilities for future development open up, new ideas gain currency and social and political forces emerge to take them forward”*

These first provocations were offered by:

Tristram Hunt

Roger Kneebone

Birgit Mager

and Dan Epstein



*Tristram Hunt: The V&A as witness*



*Roger Kneebone: Science, stories, well-being*



*Birgit Mager: Design has lost its virginity*



*Dan Epstein: One planet living*







## “Cultural Safari”: Part 1



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## WORKSHOP BRIEFING FOR PART 2 :

*In Part 1 we reflected on what drove people to make and do things in the past....*

*Our next task is to use those reflections to come up with an “Unheard-of Machine”, made of all of our brains, designed to meet our own future Needs.*

*“Out of the analysis of Nature into this superb synthesis”.*

*But the synthesis of what?*

*Our question for this part of the evening is :  
What tasks should we set this collective brain,  
the “Unheard-of Machine” to do?*

## WORKSHOP “PROVOCATIONS” FOR PART 2

Part 2 was prefaced by 3 short “provocations”,  
focussed on the future, offered by:

Indy Johar

Sarisher Mann

and Michael Pawlyn



These provocations were followed by a second “Cultural Safari” around the V&A’s galleries, with the theme inverted from Part 1, thus:

*“Reality leaves a lot to the Imagination”*







## “Cultural Safari”: Part 2



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### PART 3: SHARING PLENARY SESSION

This session was designed to allow everyone to speak if they wish:

A conversation in the round:

- Start in silence.
- Anyone can speak by standing up or raising their hand.
- Speak once only, concisely.
- Observe silence for reflection between individual contributions.
- Finish in silence.

On one occasion a group rose to speak....they asked for an “Empathy Machine....”

The 1851 and the Royal Designers gathered up the feedback from the day, including suggestion boxes and the thoughts raised in the discussion session.

A network of attendees and email addresses was shared for those who agreed.

A selection of photos from the session were distributed online for the personal use of participants on individual websites and social media feeds.





## SHEDDING LIGHT: AN INSIDER'S ACCOUNT

*To shed light on what happened at the All Change event, one of the “wildcards”, Max Fraser, design writer and curator, was embedded in the groups and commissioned to write a personal summary of the event.*

## ALL CHANGE: DESIGN AND SCIENCE IN A TIME OF CRISIS

On 28th March 2022, designers and scientists left their studios and laboratories for an afternoon and headed to the Victoria and Albert Museum in London for “All Change: Design and Science in a time of Crisis”. The event was masterminded by Tom Lloyd, Master of the Faculty of Royal Designers for Industry (RDI) and Chris Wise, Commissioner of the 1851 Royal Commission who were keen to merge a curated list of individuals from the seemingly distanced worlds of design and science for an “intentional collision of cultures”. Fifty bright minds from college age upwards gathered for a series of provocations and conversations, with the aim of tickling imaginations and inviting collaborations.

Plunged into a group of strangers is daunting but a few familiar faces eased the group into the four hours that lay ahead. Apart from a few stereotypical sartorial clues, it wasn't obvious



who was a scientist and who was a designer. As the group converged, a few hurried introductions, polite smiles and side-glances preceded introductions from Lloyd and Wise.

The meeting was aimed at addressing the time we live in, one rattled by jeopardy and anxiety. As most of us pondered why they had been summoned to this stately venue and grappled with the likelihood that the person next to them was considerably smarter, Tom Lloyd kicked things off by reinforcing the need for collective thinking and collaboration by questioning, “how could we thrive in each other's company?”, backed up by Chris Wise asking if we could “inspire exponentially.”

As the global population seemingly pivots from one crisis to another, perhaps innovation could thrive on this instability through a “new currency of shared focus, urgent timescales, the need for scale, repurposing resources, greater tolerance of failure and openness for collaboration”. Maybe, just maybe, this gathering could “rupture the assumptions on which everyday life proceeds and so create a doorway into a different kind of world, one in which people can improvise solutions inspired by generosity and empathy, goodwill and common endeavour, resilience and resourcefulness often lacking in normal times”.





Hosted in the magnificent Raphael Gallery, participants sat on a vast circular bench next to people they'd never met before, the layout devoid of a stage and wholly democratic. This levelling between participants liberated us of our individual professional labels and instead focused minds on our lofty yet worthwhile quest to somehow improve life for all on this planet.

Motivation under such circumstances can polarise between egotistical jostling and communal betterment yet there was an unsaid assumption that the latter should and would prevail, our minds set to imagine the world we should collectively sculpt beyond the horizon of our own lifetimes.

Could we, just could we, make a dent in this seemingly never-ending uphill challenge?







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A quartet of provocations prepared by some of the guests set the scene, highlighting the importance of chance encounters, our ability to handle the unexpected, problem solve through collaboration, question what we're adding to the world, challenge assumptions, understand our responsibilities, and acknowledge that one's sense of reality is different from another's (see more detailed summary below).

Afterwards, all participants were randomly assigned to one of six groups and asked to adventure into four V&A galleries with the stimulus: Imagination leaves a lot to reality.



Groups were neither assigned a leader nor challenged to reach an outcome, instead left to talk and respond to the institutional environment as an exercise in spontaneous group discussion, a lesson in the dynamic of forced collaboration. In my group we pondered the reality of those who had created the historic objects and sculptures that are now exhibits, wondering what the issues and power struggles were of their time. Would they be content with the way their legacy is perceived by us today? Such a question forced us to consider how future generations would look back on our era, one in which we avidly consumed and disposed of stuff while

obsessively documenting such plundering of finite resources. In forty-five short minutes and without knowing anything about each other's lives, our group of six had rapidly formed new relationships, eked out a spontaneous conversation and raised some existential questions that were most deserving of the subsequent tea break.

Three more provocations followed, pointing out that we're living in a policy landscape that is out of date and calling for honest and graceful debate. Could we reinvent our value system away from growth and towards social and environmental service?



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Design has failed us, came the final provocation, and a regenerative mindset is required, strengthened by human capacity for altruism, empathy and collaboration.

Indeed, empathy was a word used throughout the afternoon, brought to the fore in another gallery 'safari', this time with a different set of collaborators. We were given the brief to invent an unheard-of machine, using "our collective brains to come up with something that meets our collective needs." For three-quarters of an hour, imaginations wandered, and ideas were shared, shot down or elevated at high speed. My group settled on an Empathy

Machine, designed as a play on social media which allows users to see the consequences of their actions to encourage empathy, giving one the same endorphins as one gets from current social media apps but from doing good and feeling empathy for others. This idea came about from a feeling that the basic human emotion of empathy is missing from much of today's rhetoric.

In the final 30 minutes, the group gathered again and were all invited, should they wish, to individually stand up and share a short idea or reflection from the half-day workshop. Descending into what felt like an

uncomfortable 90 seconds of silence, someone from the group stood up and spoke, triggering a flurry of seemingly random final thoughts that were tinged with despair as much as with wisdom, hope and optimism for our collective future.

As these ideas and opinions were streamed across the room, one pondered the flow of those precious hours together: perhaps the event was altogether too comfortable and polite, itself a symptom of the grandeur subliminally imposed by the venue.







**The Cartoons and the Sistine Chapel**

Over 500 years ago, Pope Leo X commissioned Raphael to create designs for ornate tapestries for the Sistine Chapel. The chapel takes its name from Pope Sixtus IV who rebuilt it between 1473 and 1481. As the pope's private chapel and one of the holiest places for the Christian faith, it required the finest decoration.

Sixtus IV commissioned the most celebrated artist of his day to adorn the walls with frescoes representing the lives of Moses and Christ. A few years later, Pope Julius II continued this tradition by appointing Michelangelo to paint the now world-famous 'The Creation of Adam'. When Pope Leo X came to power in 1513, he...





Maybe we would have benefitted from some intentional discomfort and debate instigated in a grittier space. Possibly we should have been intent on an outcome from the meeting, inconclusive as it was. Perhaps we should have agreed that future meetings be underpinned with a mindset of disruption and rebellion rather than cooperation and agreement.

The professions of design and science could come together again but conceivably the net could be cast much wider to involve those voices that were missing, such as lawmakers and breakers, politicians and activists, bankers and bakers.

Or should we hand the mic to the generation we purport to protect, those unhampered by professional standing or accepted wisdom, those unbound by specialism and social standing? Perhaps the greatest empathetic leap we can offer would be for us to allow children and teenagers to write the brief for the rest of us to enact, all in service to the future that will play out when we're dead and gone.

(Max Fraser)







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## THE PROVOCATIONS: A SUMMARY (also by Max Fraser)

Welcomed by the V&A's director, Tristram Hunt, the stage was set for a flurry of short provocations from three diverse individuals: Roger Kneebone, Birgit Mager, and Dan Epstein.

Kneebone urged us to acknowledge that science and the arts need one another because that's how new insights happen, with some of the best ideas coming from serendipity and chance encounters. How can we ensure that people in these different universes connect? He suggested that, in different ways, we're all performers who are dealing with the unexpected along the way. *"If we bring experts from other professions into our own, we introduce other spheres of influence, helping us to see our own professions through different lenses."* The age-old human act of collaboration allows us to appreciate how people work together and deal with different viewpoints.

Birgit Mager asked us to consider who designers are designing for and pointed out that most of the time *"it's those who can pay for it"*. She suggested that *"most of the time we are getting people to pay for things they don't need and we're destroying the world"* and

that by putting humans at the centre we have *"exploited the planet and put waste on it"*. We convince ourselves that we're creating useful and desirable additions to the world but at what cost? She inferred that *"design is serving but sometimes it should lead. Designers need to question the brief and have a holistic overview of what it is about. Who is the client, what are their intentions and what impact will the design have on the world? Where is the inclusion of those who are socially and/or educationally deprived?"* She ended by suggesting that the design industry's critical reflection requires modesty, interconnection with other disciplines and responsibility.

Responding to the title 'Imagination leaves a lot to reality', Dan Epstein admitted that he struggled to define 'reality'. He stated, *"We live in a world in which the state of things as they actually exist is contested politically, socially, economically, culturally and scientifically. It's confusing and difficult to make sense of reality in an era of cultural wars."* He suggested that every individual has their own realities based on the context they find themselves in and that our experiences, perceptions and personalities differ, colliding to make many varying senses of the world. *"The idea that reality is concrete is highly questionable."*



*“We need a shared understanding of the world we live in if we want to build shared visions and collaborate effectively,” Epstein suggested. “We need to step across the divide, not just embracing different industries but different backgrounds and worldviews.” He believes that it’s easier to find technical solutions than social and economic solutions and that we need to become designers who know how to affect social, economic and system change as well as manipulate products, materials and brands.*

*“Can we move beyond a reality shaped by viability assessments, by capacity studies, by profit and loss accounts, and by personal gain?”*

He suggests that we need to move *“into a new world order shaped by whole-life assessment, systems thinking, regenerative ecology, social and diversity inclusion, into a world that values nature, and one in which we understand that we need to find a way to live as if we only had one planet.”*







Indy Johar: Long-termism



Surisher Mann: Values and “Growth”



Michael Pawlyn: Symbiogenesis

3 “provocations”, on the theme: “Reality leaves a lot to the Imagination”





After the break and refuelled, the group came together again for another set of provocations from three more individuals: Indy Johar, Sarisher Mann and Michael Pawlyn.

In a few short minutes, Indy suggested that we're still living in an Etonian world with 15th Century accounting which is working to destroy the world around us. *"We're stuck in a policy landscape that is out of date. We're living in old science when society has moved on. The science is there but somehow as society, we're not able to take the science, absorb it, and make reality."* He continued, *"We need to transform our relationship with science; to transform our relationship with science and how we make the rules in the system; and also to transform how we make the world around us. All 3 are at odds."*

He suggested that science is not about truths, it's about holding uncertainty. *"Science does not describe truths, it describes the best possible understandings of the moment in time. If you're always asking for truths, you'll always be surrounded by liars. We live in a landscape of liars because we've asked for truths."* Instead, how do we have an honest debate with the public rather than trying to convert it into false illusions of truth?

*"That requires the grace of being, a grace of*

*engagement, a grace in how we engage in ourselves."*

The next speaker, Sarisher Mann, works in sustainable finance. She was quick to point out that this is an oxymoron for many. She questioned whether we could redesign our financial motivations away from our obsession with infinite economic growth. *"How could economic degrowth decouple resource use from value creation? Would less growth make us happier if we prioritised social and economic outcomes that benefit both people and planet? How can we redesign the current system of value creation?"*

She called for us to reinvent our value system, urging disruptive imaginations and to cross the boundaries of current academic thinking with greater emphasis on collaboration across disciplines. We need to restructure everything around planetary boundaries with new forms of value metrics that understand social and environmental impacts. She cautioned us to stop serving the ego and the dominant narrative. *"If we're to design a new financial system, it has to have a material impact and not serve the same ideals as the past."*

The final provocation was delivered by architect and author Michael Pawlyn who

opened with the statement, *"Design failed to take us to where we need to be"* in relation to the damning climate reports by the IPCC. He proffered that *"zero carbon is not enough. We need to learn from systems thinking and cognitive neuroscience to think more carefully about how change happens."* And to bring about that change, we must change our mindset, going beyond sustainability by *"optimising positives and embracing a planetary perspective. We need a new regenerative mindset to help us move forward."*

*"The best way to dislodge an existing story is with a new persuasive one,"* says Pawlyn, and his message is upbeat. Rather than seeing ourselves as isolated individuals, what if we saw ourselves differently? He believes humans have a lot more capacity for altruism, empathy and collaboration. Referencing a chapter in his recent book Flourish (co-authored with Sarah Ichioka), he highlighted 'syntogenesis' and suggested that we need to revisit what it means to be human with a *"rewilding of the human spirit as we increasingly start to inhabit a new role for us as humans."* By providing social infrastructure based on a regenerative notion of humanity could be a self-reinforcing upward cycle. *"By transforming the human consciousness, we could create conditions for us all to thrive."*





Here are some of the final thoughts shared by participants:

*“One of the most moving and memorable things I’m taking away from this evening is talking to younger people and hearing that their generation are having to think very seriously about having children.”*

*“Our motives for what we do are not as pure as we imagine.”*

*“An ethical model that isn’t motivated by human beings is the most important thing.”*

*“Is it morality, or is it a deep enlightened self-interest?”*

*“The problem is the future doesn’t have a voice.”*

*“We’ve separated between different types of value. We’ve separated between generations. We separated ourselves from nature. But to move forward towards a more regenerative future we must reconnect these things back together and look at our world in it’s true complexity and really understand the entanglement of our very existence.”*

*“I was really struck with this idea of needing to live with uncertainty. And it feels very different to the idea of solution making which feels like a polarising idea because you have success and*

*failure when you’re trying to find a solution.”*

*“Photosynthesis is not perfect; it is constantly evolving, and it never reaches a state of perfection, and maybe that how we should be. Everything is changing slowly all the time and our knowledge must change and grow too.”*

*“Much of my work is about resilience. And resilience is an attribute of a complex system and it’s about how that system performs when faced with uncertainty. With everything we do we try to think expansively, and we think always of the relenting resilience which accepts uncertainty and accepts our complexity as the foundations.”*

*“We talk about nature in the abstract, but nature is the air, the land, the biodiversity, the water - we don’t even bother unpacking nature into its various components. Until we change the narrative, we are not waking up to ourselves as part of the problem, only as part of the solution.”*

*“Humans to work with Nature. Plants are essential components of the planetary habitat and sustainable development. Protecting and incorporating both cultivated and wild plants in design will help to keep within the planetary boundaries. This includes plants and all the biodiversity that lives on them, and is dependent upon them, including us as animals.”*







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## NEXT STEPS:

There is a need for the 1851 Royal Commission and the Royal Designers to digest this and consider how further collaboration can be encouraged.

Among the most consistent themes were:

- *The most generous thing we can do is to empower the younger generation.*
- *Many of those who need to be “in the room” were under-represented or missing. These include economists, financiers, politicians, industrial producers, pension funds, fossil fuel industries.*

Therefore, suggested next steps include:

1. We should continue the meaningful interaction between 1851 and RDI's, to reflect on the All Change event and develop its follow-up with a redesigned cohort.
2. We should target support towards those who will still be working in 2050, led by those under 35 - 40.
3. The oldies have a valuable roles to play: as sounding boards, as enablers, as catalysts. But the leaders of the current workstream will not inherit the longer term outcomes

directly, so a framework should be developed to gift the shape/framework/ participants to the young....and let them run it. Older participants still have much to offer, but need to understand how and when to step out of the way.

4. On the immediate agenda for this interaction is to consider, in partnership with generation 2050, how this should best be done:
  - *by new or adapted fellowships;*
  - *by supporting design:research projects;*
  - *through shared research:design projects;*
  - *through projects more closely focussed on users or manufacturers;*
  - *in projects focussed on the underpinning economic and business cultures;*
  - *through more events like All Change;*
  - *through regular All Change summer schools;*
  - *through expert networks or outreach.*
5. These suggestions need to sit within the bounds of reasonable funding, and naturally the next step is to draw them into a more focussed form for consideration by the

founding parties.

6. There is in any case interest that such gatherings should become a regular catalytic occurrence. This would empower and support the talented and committed young, with empathy...as they requested.
  - The 1851 is already strongly connected into these younger networks...directly and over the long term through its Fellows and other grant holders.
  - The Royal Designers have an equally strong network, albeit less formally constituted, and could balance quality and impact in the number of young designers using the RDI's own networks; RSA student design awards; RDI summer school alumni.
7. We believe there is the potential to develop an effective plan for ongoing action. To set parameters, we suggest this is planned over a 3 year term, subject to regular review, and potential renewal.
8. We request that time is set aside to discuss this work in the agenda for the next 1851 Board Meeting. We ask that Tom Lloyd, RDI Master, or his nominated alternate, is invited to join the Board for that part of its meeting.





Thanks from the 1851 Royal Commission  
and Royal Designers go to:

The speakers for their provocations:

Tristram Hunt  
Roger Kneebone  
Birgit Mager  
Dan Epstein  
Indy Johar  
Sarisha Mann  
Michael Pawlyn

Our photographer: Theo Wood

Our “inside wildcard” for his commentary:  
Max Fraser, design writer and curator

Our hosts at the V&A  
and of course all participants, designers,  
scientists and wildcards



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