

Creating an indoor forest for cleaner air

Our dream is to create a sustainable, air-purifying, permanent green installation, a large indoor forest, in our shared work space at Northcity4. We want to become a leading creative community for implementing and freely sharing our knowledge with the wider community on cultivating common plants for cleaner air. How are we going to do this? What's in it for us, other makers, and the wider community? **Read on!**



An early sketch for the idea of a customisable indoor forest. I.Kiuru 2014

How would our community benefit?

Our project would benefit the immediate community of artists, students and visitors at Northcity4, and the wider communities in Brunswick, Victoria, Australia, and internationally, through our shared research and inspiring outcomes. Some of the benefits would be:

- Cleaner indoor air means healthier, happier workplace. Using plants to improve air quality is a sustainable, affordable and accessible low-tech solution. Through freely shared resources via Northcity4 online presence, as well as site visits, others interested would attain inspiration and practical examples.
- Our research will establish new professional contacts between Northcity4 and institutions/individuals on the field of environmental innovation (please see further details in the attached documentation). This shared knowledge could spark further collaboration such as workshops, online discussions, and new ideas on ways to work with plants.
- An art installation combining function and fresh aesthetic will engage local designers, carpenters and gardeners, as well as provide us with new knowledge on sustainable materials and construction solutions.
- A living green installation will enrich the spirit of people in and around Northcity4. "Look deep into nature, and then you will understand everything better," said Einstein: Through seasons, plants teach us about natural phenomena, and connect us deeply to the wider environment around us.

What, why and how?

As makers at Northcity4, we frequently use various materials and fabrication methods, which create air-borne residues in our studio. To work with our conventional air-filtering system, we plan to create a large, sustainable, permanent green installation within our workspace. This will be **a living work of art, consisting of locally grown plants and custom-built vessels from recycled materials on wheels**, for mobility, easy care, and flexible re-composing for different impacts as needed.

On completion of the installation, **we will compile our research and outcomes together with further resources, and make these easily and freely accessible for anyone interested, on our website. We hope to educate, inspire and enable others to create similar projects, improving the air quality generally for the benefit of the community and the environment.**

Encouraged by NASA's Clean Air Study (please see links at the end) on how common domestic plants can effectively purify indoor air, we're determined to learn more, and **become a leading community with a deep understanding on growing plants to make a real, measurable impact on air quality.** A professional air-quality analysis at NC4 will be our first step.

Please help us to realise our dream and VOTE FOR US in the **ENVIRONMENT** category at <http://webapps.bankofmelbourne.com.au/thelocalproject/>
Thank you!!

If you're interested for more, read on... →

Supporting material for our Air-Purifying Green Indoor Forest Project

Background and inspiration

Sparked by the NASA Clean Air Project in the late 1990s, there are some practical books (see page 2) and—very general and often commercial—advice online, on the most common toxins in indoor air, and which common houseplants to cultivate to combat them. This gives us a great starting point. Yet, **we don't know of any other creative, not-for-profit communities in Australia who would've experimented with indoor plants for air cleansing, and shared their findings and experiences.** Thus, Northcity4 would like to become an active leader in the field, educating and inspiring others in the passionate way only artists can!

We don't just want to nurture a large group of plants, but to create a living, breathing, permanent work of art. Pioneers on the field of experimental gardening, such as Patrick Blanc (see page 2) whose Vertical Gardens started a global wave of interest in innovative greenery for urban interior spaces, inspire us to research and **imagine solutions which are both highly functional and stand as contemporary artworks.**

Resources we plan to design and provide for free, public use and education

We will **design and provide free, accessible information resources for the wider public**, via our online presence. We plan to design:

- **Information sheets and online tutorials on the NC4 website**, concluding our research and experiences. We'll provide information for jewellers using similar processes and chemicals as us, and in more general form, so that anyone interested can get a head start on their project.
- **Ongoing tips and updates on plants and gardening** on the NC4 Facebook page and blog.
- **A "live" online diary of the project's progress**, told in images and captions.
- Down the track, perhaps workshops with local participants, and online discussions with global small communities, on plants could evolve?

Steps we've already taken

During 2013 and 2014, as the idea of an air-cleansing indoor forest has grown, **we've already planted five of the species on NASA's top air-cleansing plant list** as samples, to see how they'd succeed in our indoor environment long-term: Areca Palm, Spider Plant, Peace Lily, Snake Plant and Weeping Fig. In addition, English Ivy is currently being grown from seedlings. The results are very positive as we have ample natural light and constant presence of artists at the space for plant care. The maintenance has been relatively easy, with moderate watering and regular fertilising. **This means a larger installation consisting of similar species in our environment would most likely have longevity, and be affordable and simple to maintain for years.**

According to Kamal Meattle's research, an environmental activist (see page 2), at least 4-5 mature plants/person are needed to make a difference. This is a lot! Next, we want to discover which other species would thrive in our specific environment at Northcity4, and get a thorough air-quality analysis conducted. – In addition, we're doing constant further research on good plant care and creative solutions for housing plants indoors. **We want to use local, sustainable resources where possible**, for the plants, gardening equipment, vessels and working processes. For initial fundraising, we've sold home-grown plants and seedlings during our Open Day on August 24, 2014.

FURTHER PLANS AND IDEAS

A smaller green outdoor installation outside of NC4 is planned for the summer 2014-15, to engage and inspire the wider public, drawing attention to our green plans, dreams and ideas.

Resources and contacts for further information and collaboration

Some key scientists and organisations to enlist for help and inspiration – list to be continued!

CERES Environment Park, East Brunswick, Melbourne, www.ceres.org.au

Professor Margaret Burchett and Dr Fraser Torby, UTS University of Technology Sydney, Plants and Indoor Environmental Quality Research Group.

Workplace indoor air analysis, Bell Laboratories, Melbourne
<http://bell-labs.com.au>

Kamal Meattle, Pioneer in using simple houseplants to clean indoor air; Indian environmental activist and CEO of Paharpur Business centre & Software Technology Incubator Park based in New Delhi, India.

Kozaburo Tanaka, Founder of the largest interior plantscaping company, Tokyo; Undertaking research and experiments with leading universities into plant related technologies in natural and artificial environments.
<http://www.ecologygarden.jp/english/index.html>

Dr B.C. Wolverton, Environmental Scientist, NASA; Founder of Wolverton Environmental, Author of How to Grow Fresh Air, Eco-Friendly Houseplants and Plants, Why We Can't Live Without Them. <http://www.wolvertonenvironmental.com/book1.htm> and http://spinoff.nasa.gov/Spinoff2007/ps_3.html

Patrick Blanc, Artist and innovator in vertical indoor gardens, France, <http://www.verticalgardenpatrickblanc.com>

Research and the key literature which we've been using

Dr B.C. Wolverton: *Plants: Why You Can't Live Without Them* (2010, Roli Books)

How to Grow Fresh Air: 50 House Plants that Purify Your Home or Office (2008, Weidenfeld & Nicolson)

Eco-friendly Houseplants: 50 Indoor Plants That Purify the Air (1997, Penguin Books)

Wolverton, Johnson and Bounds: *Interior Landscaping Plants for Indoor Pollution Abatement* (NASA 1989)

An excellent TED talk on Kamal Meattle's personal experiences on conquering allergies by using three common houseplants: http://www.ted.com/talks/kamal_meattle_on_how_to_grow_your_own_fresh_air?language=en

An informative site with images and good references: <http://air-purifier-reviewsite.com/blog/15-house-plants-you-can-use-as-air-purifiers>

NASA list of top air-purifying indoor plants

We already grow the bolded species, star-marked are on the wishlist next.

Areca Palm

English ivy (*Hedera helix*)

Spider plant (*Chlorophytum comosum*)

** Golden pothos or Devil's ivy (*Scindapsus aureus* or *Epipremnum aureum*)

Peace lily (*Spathiphyllum 'Mauna Loa'*)

Chinese evergreen (*Aglaonema modestum*)

** Bamboo palm or reed palm (*Chamaedorea sefritzii*)

Snake plant or mother-in-law's tongue (*Sansevieria trifasciata 'Laurentii'*)

Heartleaf philodendron (*Philodendron oxycardium*, syn. *Philodendron cordatum*)

Selloum philodendron (*Philodendron bipinnatifidum*, syn. *Philodendron selloum*)

Elephant ear philodendron (*Philodendron domesticum*)

** Red-edged dracaena (*Dracaena marginata*)

** Cornstalk dracaena (*Dracaena fragans 'Massangeana'*)

** Janet Craig dracaena (*Dracaena deremensis 'Janet Craig'*)

** Warneck dracaena (*Dracaena deremensis 'Warneckii'*)

Weeping fig (*Ficus benjamina*) Gerbera daisy or Barberton daisy (*Gerbera jamesonii*)

Pot mum or florist's chrysanthemum (*Chrysanthemum morifolium*)

** Rubber plant (*Ficus elastica*)