



Red de investigadores
chilenos en los Países Bajos



Integrating knowledge and human capital for the development of Chile

1st Conference IN.NL

February 10th, 2017
Delft, The Netherlands

IN.NL - Network of Chilean Researchers in the Netherlands

1st Conference IN.NL: 'integrating knowledge and human capital for the development of Chile'

IN.NL - Red de Investigadores Chilenos en los Paises Bajos

1er Encuentro anual IN.NL: 'integrando conocimiento y capital humano para el desarrollo de Chile'

1st Conference IN.NL:

'integrating knowledge and human capital for the development of Chile'

This booklet is based on the results from the 1st Conference IN.NL, held on February 10th, 2017 in the Faculty of Architecture of Delft University of Technology, Delft, The Netherlands.

IN.NL (Network of Chilean Researchers in the Netherlands) is a platform for dissemination and collaboration among Chileans involved in research, innovation and development, residing in the Netherlands.

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Internal coordination and tasks

Felipe Perona - General coordination
Luz Maria Vergara - Logistics
Javiera Espoz - Finance
Carmina Rodriguez - Communication
Alejandro Prieto - Partnerships

Zone coordinators

Monica Lobato - Groningen
Francisco Ceron - Amsterdam
Lucia Frez - Wageningen
Alejandro Prieto - Delft
Natalia Smith - ReCh

Contact information

www.in-nl.net
innl@in-nl.net

Editors

Alejandro Prieto, Luz Maria Vergara

Graphic design and layout

Alejandro Prieto, Luz Maria Vergara

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Delft, The Netherlands.
February 10th, 2017

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Introduction



IN.NL : Network of Chilean Researchers in the Netherlands is a platform for dissemination and collaboration for Chileans involved in research, innovation and development, residing in the Netherlands. Hence, encouraging the exchange of knowledge, experiences and information among Chilean researchers and students is one of its main objectives.

Under that framework, the first IN.NL Conference was organised, with the goal to show current work being done by its members, encouraging the interaction and discussion of common topics. For this first occasion, the proposed main concept behind the conference was 'integration', being understood as a fundamental necessity for the further development of Chile and a declaration of principles for this newly born researchers' network. This need for integration was addressed from several fronts, considering the integration of scientific knowledge from multiple disciplines, integration and transferability potential between Chile and Netherlands, integration of human capital, and gender integration and equality in science and technology fields.

The conference was structured around the work being conducted in the different zones of the country, providing the opportunity for IN.NL members to show their work in a poster exhibition. Besides, the event counted with the participation of renowned academics and entrepreneurs as guest speakers, who shared their experience and debated about possibilities and constraints for integration from various perspectives, focusing on Chile's challenges in the near future and the potential role for networks such as IN.NL in that context.

IN.NL : Red de Investigadores Chilenos en los Países Bajos, es una plataforma de difusión y colaboración para chilenos involucrados en investigación, innovación y desarrollo, residentes de los Países Bajos. Entre sus principales objetivos se encuentra el fomentar el intercambio de conocimiento, experiencias e información entre investigadores y estudiantes chilenos en Holanda.

Bajo ese marco se realizó el Primer Encuentro IN.NL, que tuvo por objetivo visibilizar el trabajo realizado por sus miembros, fomentando la interacción y discusión de temas de interés común. En esta primera ocasión, el concepto tras la convocatoria fue la integración, entendida como una necesidad fundamental para el desarrollo de Chile y una declaración de principios que refuerza la creación de la naciente Red. Esta necesidad de integración se planteó en distintos frentes, considerando la integración de conocimiento científico desde múltiples disciplinas, integración y transferencia entre los contextos de Chile y los Países Bajos, integración de capital humano avanzado, e integración de género en la ciencia y tecnología.

El Encuentro se organizó en función del trabajo desarrollado en las distintas Zonas del país, otorgando la oportunidad a sus participantes de presentar sus proyectos e investigaciones en una exposición de posters. Además, el evento contó con la participación de destacados académicos y emprendedores como expositores invitados, quienes compartieron su experiencia y debatieron acerca de posibilidades y problemas para la integración desde variadas perspectivas, poniendo énfasis en los desafíos que deparan a Chile en el futuro cercano y el potencial rol de IN.NL en ese contexto.



1st Conference IN.NL



Conference programme



- 13:00 Opening
- 13:05 Presentation IN.NL
Red de investigadores chilenos en los Paises Bajos
- 13:20 Keynote speaker: Darinka Czischke
Integracion de genero en el desarrollo científico y tecnológico
- 13:45 Zone presentation: AMSTERDAM
- 14:05 Zone presentation: WAGENINGEN
- 14:25 Keynote speaker: Laurens Klerkx
Integracion y transferencia entre Chile y los Paises Bajos
- 14:50 Poster session / Coffee break
- 15:30 Keynote speaker: Manuel Toledo
Emprendimiento en los Paises Bajos, un ejemplo de gestión e innovación.
- 15:55 Zone presentation: DELFT
- 16:15 Zone presentation: GRONINGEN
- 16:35 Round table: Darinka Czischke, Laurens Klerkx, Manuel Toledo & Pablo Isla
Integracion de conocimiento y capital humano para el desarrollo de Chile
- 17:25 Music: Saonda
- 18:00 Closing & drinks

Speakers



Darinka Czischke

Delft University of Technology



Darinka is Assistant Professor at the Delft University of Technology (TU Delft). In 2014 she was awarded the Delft Technology Fellowship to develop her own research programme on “Collaborative Housing”. Darinka holds a PhD in Architecture (TU Delft), an MSc in Regional and Urban Planning (London School of Economics, LSE) and a B.A. (Hons) Sociology (Pontificia Universidad Católica de Chile). Previously, she ran her own consultancy and worked as Director of the Building and Social Housing Foundation - BSHF (2013), Research Director of the European Social Housing Observatory at CECODHAS Housing Europe (2004-2010), and as a research associate at the LSE Cities Programme (2002-2004).

Darinka is co-founder and joint coordinator of the ENHR working groups “Policy and Research” and “Collaborative Housing”. She is a renowned specialist in the fields of social and affordable housing, from an international comparative perspective, and in topics of urban regeneration and sustainable urban development. She has lectured and published extensively in these fields and she performs as regular advisor of international organisations, such as the European Commission (EC), the European Investment Bank (EIB), the URBACT programme about sustainable urban development, Habitat for Humanity, and, recently, the Housing Partnership of the Urban Agenda for the European Union.

Darinka es profesora adjunta en la Facultad de Arquitectura, Delft University of Technology (TU Delft). En 2014 obtuvo la “Delft Technology Fellowship” para desarrollar su propio programa de investigación en el tema “Vivienda colaborativa” (“Collaborative Housing”). Darinka es Doctora en Arquitectura por la TU Delft, Master of Sciences (MSc) en Planificación Regional y Urbana (con Distinción) de la London School of Economics and Political Science (LSE), y Socióloga (Premio de Honor) por la Pontificia Universidad Católica de Chile. Anteriormente, dirigió su propia consultora y trabajó como directora de la Building and Social Housing Foundation (BSHF) en el Reino Unido (2013); como Directora de Investigación del Observatorio Europeo de la Vivienda Social en “CECODHAS Housing Europe” en Bruselas (2004-2010); y como investigadora asociada en el LSE Cities Programme, Londres (2002-2004).

Darinka es co-fundadora y coordinadora conjunta de los grupos de trabajo “Policy and Research” y “Collaborative Housing” en la Red de Investigación Europea en Vivienda (ENHR). Darinka es una reconocida especialista en el campo de la vivienda social y la vivienda asequible desde una perspectiva internacional comparada, y en temas de regeneración y desarrollo urbano sostenible. Ha enseñado y publicado extensamente en estos campos y se desempeña como asesora regular de organismos internacionales, tales como la Comisión Europea, el Banco Europeo de Inversiones, el programa URBACT sobre desarrollo urbano sostenible, Hábitat para la Humanidad, y, más recientemente, la “Housing Partnership” de la Agenda Urbana de Unión Europea.

Speakers



Laurens Klerkx
Wageningen University - RUR

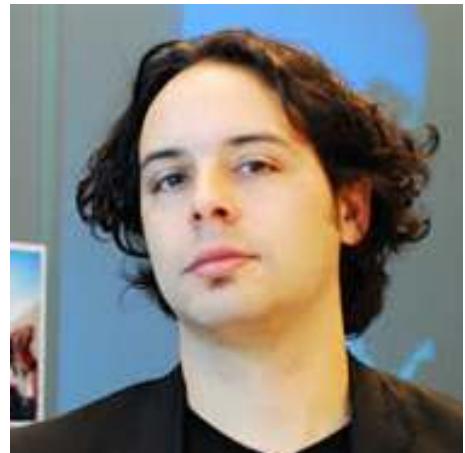
Laurens Klerkx is an associate professor at the Knowledge, Technology and Innovation Group of Wageningen University. His research focuses on dynamics of multi-actors collaboration for innovation, knowledge systems, and policies for research, development and innovation. He has published over 70 articles in scientific journals about these topics, together with a research team of PhD and PostDoc researchers working under his supervision.

Laurens works mainly in the agriculture and livestock sectors, developing projects in countries such as Kenya, Ghana, Vietnam, Indonesia, Netherlands, New Zealand, Brazil and Chile. His relationship with Chile goes back to over 15 years, carrying out research in the country through programmes such as 'Núcleo Milenio', and the Programme for Attraction and Insertion of Advanced Human Capital, from the National Commission for Scientific and Technological Research (CONICYT). Currently, Laurens is carrying out a project in Chile, founded by WOTRO Science for Global Development programme, from the Netherlands Organisation for Scientific Research (NWO).

Laurens Klerkx es profesor asociado (associate professor) en el 'Knowledge, Technology and Innovation Group' de Wageningen University. Su investigación es en temas de dinámicas de colaboración multi-actor para la innovación, sistemas de conocimiento, y políticas de I&D e innovación. Ha publicado más de 70 artículos en revistas científicas sobre estos temas, en conjunto con un equipo de PhDs y postdocs quienes trabajan bajo su supervisión.

Laurens trabaja sobre todo en el sector agropecuario, realizando proyectos en países como Kenia, Ghana, Vietnam, Indonesia, Holanda, Noruega, Nueva Zelanda, Brasil y Chile. Su relación con Chile lleva más de 15 años, y ha realizado investigación en Chile a través de programas como Núcleos Milenio y el Programa de Atracción de Capital Humano Avanzado de CONICYT. Actualmente tiene un proyecto en Chile financiado por NWO-WOTRO.

Manuel Toledo Toledotaegui



Manuel Toledo is an industrial designer and cultural producer. He studied Design and Public Space at the Design Academy Eindhoven in the Netherlands. Manuel works developing projects in the fields of culture, architecture and design, through two main entrepreneurship: Toledotaegui and Trekken Design Studio. He has worked as an independent designer as well as for institutions, such as TU Delft in the development of a sustainable house in The Netherlands, and for the Urban-Think Tank in Zurich and Caracas on architecture projects in India and The Netherlands.

Since 2012 he co-organizes the Arqfilmfest in Santiago, Chile, the first architecture film festival of Chile and Latin America. This festival has now reached its third successful edition, and has grown with each iteration. Manuel acted as President of the Encuentros Chile Global Rotterdam 2015 Conference, which enabled the gathering of the largest international network of Chilean researchers, entrepreneurs and professionals abroad to discuss the sustainable future of Chile. Following his experiences in Santiago, Manuel founded ArchFilmFest London in 2016, along the british architect Charlotte Skene Catling, becoming the first festival of its kind to date. Manuel's work seeks and deeply explores new international interactions in the fields of culture and creative industries.

Manuel Toledo es diseñador industrial y productor cultural. Estudió Diseño de espacios públicos en el Design Academy Eindhoven, en los Países Bajos. Manuel trabaja en el desarrollo de proyectos en el área de la cultura, arquitectura y diseño a través de sus dos emprendimientos Toledotaegui y Trekken Design Studio. Ha trabajado como diseñador independiente, y para instituciones como TU Delft, en el desarrollo de la primera casa sustentable de los Países Bajos, y para el Urban-Think Tank en Zúrich y Caracas, en proyectos de arquitectura en India y los Países Bajos.

Desde el 2012 coorganiza el Festival de cine y arquitectura de Santiago, ArqFilmFest, siendo este el primero de Chile y Latinoamérica. El festival ya ha alcanzado su tercera exitosa edición, siendo reconocido internacionalmente. Manuel trabajo como Presidente de la organización de la conferencia Encuentros Chile Global Rotterdam 2015, permitió reunir a la red más grande de investigadores, profesionales y emprendedores chilenos en el extranjero, para discutir un futuro sustentable para Chile. El año 2016 Manuel co-funda el ArchFilmFest London, junto a la arquitecta Británica Charlotte Skene Catling, transformándose en el primer festival de su tipo en el Reino Unido a la fecha. El trabajo de Manuel busca, explora y profundiza nuevas interacciones internacionales en el área de la cultura y las industrias creativas.

IN.NL

Structure & working zones



Utrecht



Amsterdam



Groningen



Delft



Wageningen



Rotterdam



IN.NL is defined as a platform for dissemination and collaboration for chileans involved in research, innovation and development between Chile and the Netherlands. It is understood as a network of permanent contacts based in the Netherlands, without any political ideology, and as a tool for dissemination and scientific collaboration among agents linked to research and development from both countries. As agents, we consider academics, master students, PhD researchers, entrepreneurs and professionals with common interests around research, innovation and scientific development en several fields.

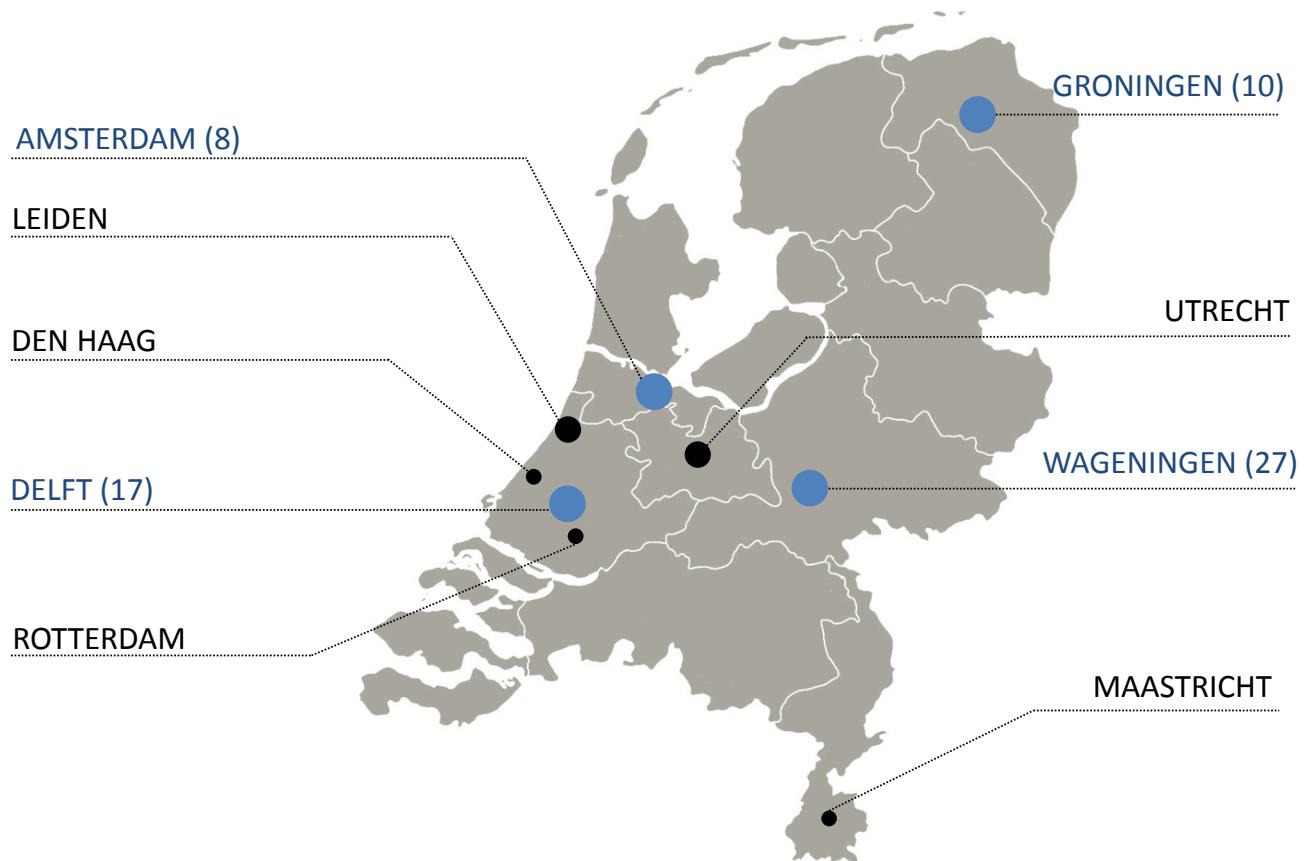
The organisational structure of the network during its forming period has followed a horizontal model based on a board, in which each active zone within the country is duly represented. The board itself is structured around two concentric circles, with a General Coordination in the centre, in charge of monitoring the achievement of defined goals and overall functioning of the network.

The upper image shows the circles behind the Board, with members in charge during the period 2016-2017. On the one hand, the red circle shows the roles related to the coordination of general tasks of the network: logistics, finance, communication and partnerships. On the other hand, the blue circle shows the coordinators of all active zones of the country (Amsterdam, Groningen, Wageningen and Delft). The representant of IN.NL in ReCh (Chilean Networks Association) is depicted separately, due to the specificity of the task. However, it is probable that similar roles appear in the near future, assuming that IN.NL establishes alliances with other organisations as such.

IN.NL se define como una plataforma de difusión y colaboración para chilenos involucrados en investigación, innovación y desarrollo entre Chile y los Países Bajos. La plataforma se entiende como una red de contactos permanentes con base en los Países Bajos independiente de cualquier ideología política y una herramienta para la difusión y colaboración científica entre agentes vinculados a la investigación y desarrollo en ambos países. Bajo la definición de agentes, se consideran académicos, estudiantes de magíster y doctorado, emprendedores, empresarios y profesionales cuyos intereses estén vinculados a la investigación, innovación y desarrollo científico en diversas áreas temáticas.

La estructura organizacional de la red durante su proceso fundacional ha seguido un modelo horizontal basado en un directorio en que se asegura la representación de cada zona actualmente activa. El directorio a su vez, se estructura a partir de dos anillos concéntricos, con una coordinación general a la cabeza, a cargo de velar por el cumplimiento de las metas y el funcionamiento general.

La imagen superior muestra los círculos que componen el directorio, con los miembros a cargo durante el periodo 2016-2017. En rojo se encuentran los cargos dedicados a la coordinación de tareas generales de la Red: logística, finanzas, difusión y extensión. Por otro lado, en azul se encuentran los representantes por cada zona activa en el país. La representación de IN.NL en ReCh (Redes Chilenas) esta aparte, dado su carácter puntual. Sin embargo, es probable que cargos similares aparezcan en el futuro, en el caso que IN.NL establezca alianzas con otras organizaciones, generando otro circulo en la estructura interna.



At territorial level, the network is organised in zones associated to main dutch cities where we have found participating interest from the local chilean scientific community. At the date of the Conference, IN.NL has 62 active members distributed in four zones: Amsterdam, Wageningen, Delft and Groningen. These zones have consolidated as active groups where their integrants meet periodically and organise their own activities. In turn, the members of each zone are represented in the IN.NL Board through their coordinators.

There are other identified zones such as Maastricht, Rotterdam, Leiden, The Hague and Utrecht, where although they are not fully consolidated as such, local chilean researchers have expressed interest of being part of the network and involve actively. In the future, and according to further demand for it, it is within the expected that each one of these cities consolidates itself as a fully active zone with representation in the board. It is within the spirit of the network to promote self-organisation of the zones according to local interest from the professionals, researchers, academics and students that reside in them.

Active working zones 2016-2017:

- Amsterdam
- Wageningen
- Delft
- Groningen

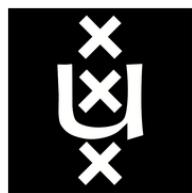
A nivel territorial, la red se encuentra organizada en zonas asociadas a ciudades en las que se ha identificado interés de participar por parte de la comunidad científica chilena residente. A la fecha del Encuentro la red está compuesta por 62 miembros activos distribuidos en cuatro zonas: Amsterdam, Wageningen, Delft y Groningen. Estas zonas se han consolidado como grupos activos en los cuales sus integrantes se reúnen periódicamente y organizan sus propias actividades. A su vez, los integrantes de cada zona son representados en la directiva a través de sus coordinadores.

Existen también otras zonas como Maastricht, Rotterdam, Leiden, La Haya y Utrecht en que si bien no están consolidadas como tal, investigadores residentes en esas áreas han mostrado el interés de ser parte de la red e involucrarse más activamente. En el futuro y en la medida que exista la demanda, se espera que cada una de estas ciudades se consolide también como zona con representación en la directiva. El espíritu de la red es incentivar la auto organización de las zonas de acuerdo a los intereses de los profesionales, investigadores, académicos y estudiantes que las componen.

Zonas de trabajo activas 2016-2017:

- Amsterdam
- Wageningen
- Delft
- Groningen

AMSTERDAM



We are 11 members, from which 9 are living in Amsterdam, and 2 in Santiago. Among the former, 6 are pursuing a PhD degree and 1 is doing a research master at the Universiteit van Amsterdam, 1 at the Radboud Universiteit, and 1 professional who works at Vrije Universiteit. The two people in Santiago took a master's degree at the Universiteit van Amsterdam. All the members are doing research in social sciences or humanities, in the following disciplines: sociology, education, communication, and linguistics. The link with Chile lies mainly in the chosen research topics, using Chilean databases, or comparative studies between Chile and European countries. For the same reason there is some degree of institutional linkage with ministries and related organizations, and universities in which members had links. We plan to hold social and programmatic meetings in the future.

Institutions involved:

Universiteit van Amsterdam (UvA)

- Faculty of Social and Behavioral Sciences
- Faculty of Humanities

Radboud University Nijmegen

- Centre for Language Studies
- School for Language Sciences.

Somos 11 integrantes, de los cuales 9 estamos viviendo en Amsterdam, y 2 en Santiago. Dentro de los primeros, 6 están haciendo un PhD y 1 un research master en la Universiteit van Amsterdam, 1 en la Radboud Universiteit. Y una profesional que trabaja en la Vrije Universiteit. Las dos personas en Santiago realizaron un master en la Universiteit van Amsterdam. Todos los integrantes están realizando investigación en ciencias sociales o humanidades, en las siguientes disciplinas: sociología, educación, comunicación, y lingüística. La vinculación con Chile radica principalmente en los tópicos de investigación elegidos, utilizando bases de datos de Chile, o realizando estudios comparativos entre Chile y países europeos. Por la misma razón hay algún grado de vinculación institucional con ministerios y organizaciones dependientes, y universidades con vínculo previo. Tenemos planeado realizar reuniones sociales y programáticas a futuro.

Instituciones involucradas:

Universiteit van Amsterdam (UvA)

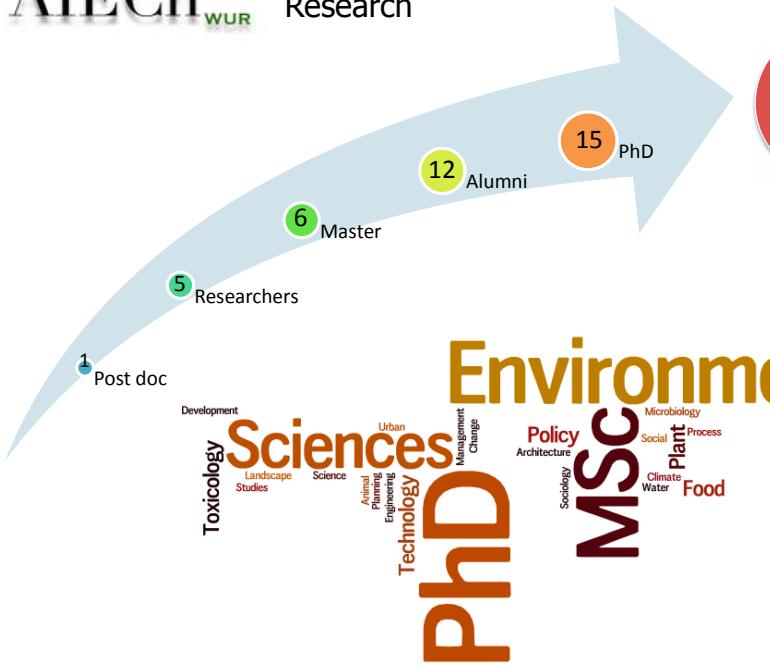
- Facultad de ciencias sociales y de comportamiento
- Facultad de Humanidades

Radboud University Nijmegen

- Centro de estudios del lenguaje
- Escuela de ciencias del lenguaje



Asociación de Investigadores y Estudiantes
Chilenos en Wageningen University &
Research



WAGENINGEN



We are a group of 39 students, researchers, alumni and entrepreneurs that came to Wageningen with a clear goal: to learn how to explore the potential of nature to improve the quality of life. That's why we are a multidisciplinary group with members having specializations in several areas, such as food sciences, plant sciences, animal sciences, environmental sciences, and social sciences. We also have our own association of researchers and students at Wageningen University & Research (AIECh-WUR) which aims at promoting cooperation and scientific exchange.

Wageningen University & Research (WUR)

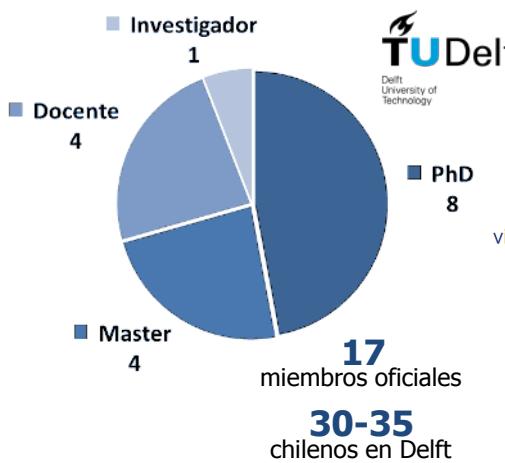
The university has five core research areas: agro-technology and food sciences, animal sciences, environmental sciences, plant sciences, and social sciences. Each of them is linked to one or more research institutes, which reflects how WUR achieved its high potential by creating a strong network between academia and industry.

Somos un grupo de 39 estudiantes, investigadores, alumni, y emprendedores que vinieron a Wageningen con un objetivo: aprender cómo explorar el potencial de la naturaleza para mejorar la calidad de vida. Es por esto que somos un grupo multidisciplinario con integrantes que poseen especializaciones en diversas áreas, tales como: ciencias de los alimentos, ciencias vegetales, ciencias animales, ciencias medioambientales, y ciencias sociales. También tenemos nuestra asociación de estudiantes e investigadores en Wageningen University & Research (AIECh-WUR), la cual tiene por objetivo promover la cooperación y el intercambio científico.

Universidad de Wageningen

La universidad tiene cinco áreas centrales de investigación: tecnología agraria y ciencias de los alimentos, ciencias animales, ciencias medioambientales, ciencias vegetales, y ciencias sociales. Cada área está relacionada a uno o más institutos de investigación, lo que refleja como la universidad ha alcanzado su alto potencial, creando un fuerte vínculo entre academia e industria.

DELFT



ingeniería
tratamiento
simulación imágenes ambiental dinámicos
confort arquitectura ferroviaria
fachadas operaciones
gestión sistemas
eficiencia energética construcción
inteligencia usuario smart grids
comportamiento computacional sensores
computacional transporte
diseño



IN.NL has 17 official members in Delft, with an unofficial estimation of 30-35 chileans related to research activities (students, researchers or academics) living in the city. Among IN.NL members, most of them are PhD researchers (8), while the group also considers master students (4), academics (4) and an independent researcher (1).

IN.NL research activities in the zone are entirely related to Delft University of Technology (TU Delft) with members of the network in 6 out of 8 existing faculties. Being a technical University, TU Delft particularly excels in fields related to engineering and design. Within these general fields, topics of interest from IN.NL members in Delft are energy efficiency, sustainability in the built environment, housing management, computer simulations, water management, smart grids and transportation systems, among others.

There are several on-going and past collaboration activities between chilean institutions and TU Delft, carried out by IN.NL members, such as co-supervision of PhD researchers, exchange and internships for master students, and the organisation of workshops and seminars in Chile with the participation of TU Delft academics.

TU Delft Faculties with IN.NL presence:

- Applied Sciences (AS)
- Architecture and the Built Environment (Arch)
- Civil Engineering and Geosciences (CEG)
- Electrical Engineering, Mathematics and Computer Science (EEMCS)
- Industrial Design Engineering (IDE)
- Technology, Policy and Management (TPM)

IN.NL tiene 17 miembros oficiales en Delft, con una estimación no oficial de alrededor de 30 a 35 chilenos relacionados a la investigación viviendo en la ciudad. La mayoría de los miembros de la red son candidatos a doctor (8), mientras que el grupo también considera estudiantes de master (4), académicos (4) y un investigador.

Las actividades de investigación en la zona están totalmente relacionadas a la Universidad Técnica de Delft (TU Delft), con miembros de la red en 6 de las 8 facultades que componen la universidad. Siendo una universidad técnica, ésta particularmente se destaca en los campos de la ingeniería y el diseño. Temas de interés de los miembros de la zona son: eficiencia energética, sostenibilidad en el entorno construido, gestión de la vivienda, simulaciones, manejo del agua, redes inteligentes y sistemas de transporte, entre otros.

Hay registro de variadas actividades de colaboración entre instituciones chilenas y TU Delft llevadas a cabo por miembros de la red, como co-tutelas doctorales, intercambio de alumnos, y la organización de talleres y seminarios en Chile con la participación de docentes TU Delft.

Facultades de TU Delft con presencia IN.NL

- Ciencias aplicadas (AS)
- Arquitectura y el entorno construido (Arch)
- Ingeniería civil y ciencias de la tierra (CEG)
- Ingeniería eléctrica, Matemáticas y ciencias informáticas (EEMCS)
- Diseño industrial (IDE)
- Tecnología, políticas públicas y gestión (TPM)



GRONINGEN



Participantes	Activos	Contactos	Total
Miembros	10	06	16

Actividad	Activos	Contactos	Total
Maestría	2	2	4
Doctorado	7	4	11
Post-doc	1	0	1

Groningen has 10 active members and 6 people participating as “contact”. Eight people are studying a PhD, 4 a master and one a post-doc. Almost all are studying with an scholarship: 8 Becas Chile, 3 UMCG (university) and 19% Erasmus. Only two people have a contract with the university. All members are studying at the University of Groningen, in one of the 4 main faculties: Medical Sciences (8 members; topics: gestational diabetes, hepatic fibrosis, depression, drug abuse, magnetometry techniques); Mathematics and Natural Sciences (6 members; topics: modeling in evolution, polymers, inflammatory diseases, astronomical instrumentation, beginning of the universe, behavior in birds); Arts (1 member: language disorder); and Social Sciences (1 member; topics: bullying).

As Groningen-zone we have regular meetings to discuss the core issues as a network and to make proposals to the other zones. In addition, we participate in informal activities, such as celebrating National Holidays, among others. Within members' activities, two theses are carried out with Chilean population: (1) on drug abuse, with support from the Chilean National Institution in charge of this public policy (SENDA), and (2) on language disorder, in collaboration with the specialized center of the Catholic University (CEDETi-UC). Along with this, the thesis in astronomy (instrumentation enhancement for the ALMA telescope) is carried out within the framework of a collaboration project between the Universities of Chile and Groningen, co-financed by NOVA (Netherland Research School for Astronomy).

En Groningen participan 10 personas de manera activa y 6 como “contacto”. De ellos, 11 son estudiantes de doctorado, 4 de maestría y un post doctorado. Casi todos están estudiando con alguna beca: 8 Becas Chile, 3 beca UMCG (universidad) y 3 beca Erasmus. Solo 2 personas tienen contrato con la universidad. Todos se encuentran estudiando en la Universidad de Groningen, en alguna de sus cuatro facultades principales: Medicina (8 personas; temas: Ciencias médicas (diabetes gestacional, fibrosis hepática, depresión, abuso de drogas, técnicas de magnetometría); Matemáticas y Ciencias Naturales (6 personas; temas: modelamiento en evolución, polímeros, enfermedades inflamatorias, instrumentación astronómica, inicio del universo, comportamiento en aves); Artes (1 persona; tema: trastorno de lenguaje); y Ciencias Sociales (1 persona; tema: bullying).

Como Zona-Groningen mantenemos reuniones regulares para discutir los temas centrales como red y hacer propuestas de trabajo a la red nacional. Además de realizar actividades informales, como la celebración de fiestas patrias, entre otros. Dentro de las actividades de los miembros, dos tesis se realizan con población chilena: (1) consumo problemático de drogas, con apoyo de la institución nacional en la materia (SENDA) y (2) trastorno del lenguaje, en colaboración con el centro especializado de la Pontificia Universidad Católica (CEDETi-UC). Junto con ello, la tesis en astronomía (mejoramiento de instrumentación para el telescopio ALMA) se realiza en el marco de un proyecto de colaboración entre las Universidades de Chile y Groningen, co-financiado por NOVA (Netherland Research School for Astronomy).



IN.NL

Research panorama



1^{er} Encuentro
de Investigadores
Chilenos en los Países Bajos

Ongoing projects 2017



Embajada de Chile
en Países Bajos

tro
adores
n los Países Bajos

Integration of Temperature Sensors Into a CMOS Image Sensor



Summary: Most of image sensors devices, like cameras and mobiles, are based on CMOS technology. CMOS has become the leader technology due to its low cost and is highly integrable in mobiles, tablets and laptops. These devices suffer from dark current noise which is one of the main contributors of the total noise of the images. Dark current highly depends on temperature. Also, self-heating of the circuitry surrounding the image pixels locally contributes to thermal difference. Dark current is now compensated by using temperature sensors outside of the pixel array. The aim of this research is to measure temperature difference locally into the pixel array itself to compensate the dark current effect.

Resumen: La mayoría de los sensores de imágenes, tales como cámaras y celulares, se diseñan con tecnología CMOS. Esta tecnología es la más usada debido a su bajo costo y la fácil integración dentro de laptops y celulares. Estos dispositivos sufren de ruido de corriente térmica, el cual contribuye de gran manera al ruido total de la imagen. El ruido por corriente térmica depende en gran medida de la temperatura. Actualmente, este ruido se compensa usando sensores de temperatura externos al sensor de imagen. El objetivo de esta investigación pretende integrar los sensores de temperatura dentro del sensor de imágenes para compensar el efecto del ruido térmico.

Introduction and Results

In a CMOS image sensor of 192x64 pixels around 500 temperature sensors have been uniformly integrated. These temperature sensors are based on Bipolar transistors (BJT). The temperature is measured by using the Base-Emitter voltage difference (ΔV_{BE}). This voltage is proportional to absolute temperature:

$$\Delta V_{BE} = V_{th}T \cdot \ln(pr)$$

where V_{th} is the thermal voltage 26mV @ 25°C, and pr is the ratio between two different biasing currents.

Figure 1 shows a picture using the image sensor. The black dots correspond to the temperature sensors.

Figure 2 shows average temperature measurements of the 500 BJTs in a range of 30 – 100 °C. The average error is less than 0.2°C, as shown in Figure 3. However, the individual 3σ error is close to 2.5°C and the global 3σ error is almost 15°C.

Results show that it is possible to integrate temperature sensors into a CMOS image sensor. Temperature measurements have been done in a range of 30 - 100°C by using the BJTs showing a very good accuracy in this range. More measurements are ongoing.



Figure 1: Picture taken by the image sensor. Black dots correspond to the temperature sensors.

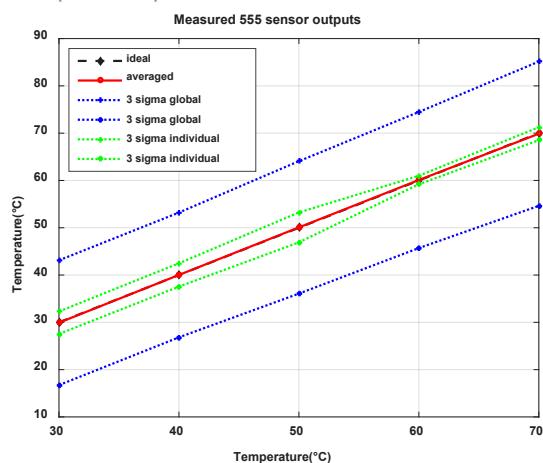


Figure 2: Average temperature measurement in a range 30-100°C.

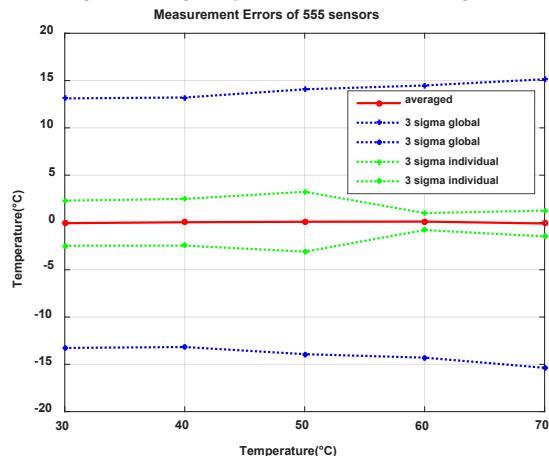


Figure 3: Error of the temperature measurements.

PROJECT INFORMATION

Researcher: Accel Nicolas Abarca Prouza
 Supervisor: Prof. Dr. Albert Theuwissen
 Zone: Delft
 Affiliation: TU Delft
 E-mail: a.n.abarcaprouza@tudelft.nl
 Personal webpage (if applies):

RELATED PUBLICATIONS

- Authors, editors (year) Title, subtitle, publisher, city, ISBN/ISSN

An Architecture of the Here and Now

Redefining the Tools and Role of the Architect: the case of the Amereida group, Chile.



This research carries out the revision of the design and building procedures explored by the School of Valparaíso and the Open City of Amereida since 1952 until the present day. By performing document analysis and observation in 1:1 construction experiences, the project seeks to interpret the possible redefinition of the tools and role of the architect in the context of the group discourse and praxis; characterized by questioning the logics of planning employing in-situ improvisation during the conception and materialization of open-ended architectural works.

Esta investigación lleva a cabo la revisión de los procedimientos de diseño y construcción explorados por la Escuela de Valparaíso y la Ciudad Abierta de Amereida desde 1952 hasta la actualidad. Por medio de análisis documental y observación en experiencias de obra 1:1, el proyecto busca interpretar la posible redefinición de las herramientas y rol del arquitecto en el contexto del discurso y praxis del grupo; caracterizada por cuestionar la lógica del plan con prácticas propias de la improvisación durante la concepción in-situ y materialización de obras arquitectónicas de término-abierto.



RESEARCH PURPOSE STATEMENT

The intent of this case study research is to explore how the tools and role of the architect might be redefined when practicing a design and build approach that questions the logics of planning. The research will focus on the particular case study of the Amereida group, an experimental community of architects, artists and poets based in Chile since 1952; characterized by exploring the productive relation between poetry and architecture. An exploration that has lead to the attempt of achieve an architecture done *here and now*, by crossing the spatiality of the place with the poetic spoken word. A tentative definition of this '*here and now*' approach at this time will be the attempt to sustain the conception and materialization of an architectural work as simultaneous actions in the pure present.

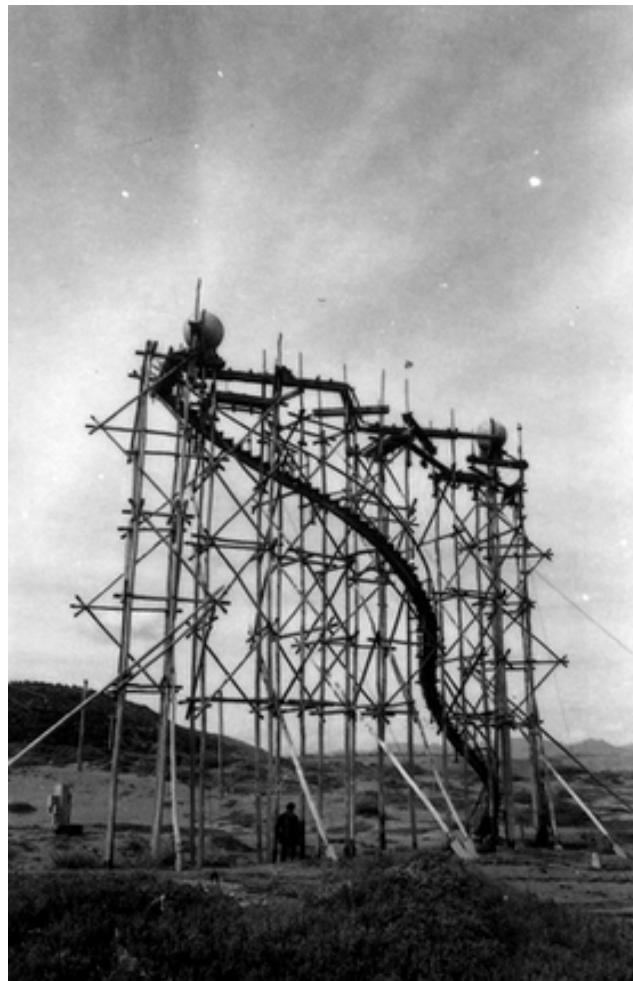
RESEARCH QUESTION AND OBJECTIVES

The main research question can be formulated as follows: How does the tools and role of the architect may have been redefined within the design and build approach of the Amereida group? This main question is broken in several sub-questions inquiring aspects such as the fundamentals constituting the group position (discourse), as well as the principles and practices conforming their procedures (praxis). This fields of inquiry define a set of research objectives:

- Recognize the fundamentals characterizing the group position.
- Identify the group design and build principles.
- Trace and describe the group experimental practices.
- Analyze and interpret how the tools of the architect are redefined by this approach.
- Analyze and interpret how the role of the architect is redefined by this approach.

RESEARCH METHODS

Document analysis, interviews & focus group, and participant observation in 1:1 construction experiences conform the collection of qualitative research methods proposed to trace and describe the group discourse as well as the principles and practices conforming their design and build approach. These methods are applied in two research phases, an initial descriptive phase which then gives room to the analysis and interpretation of the influence that the group approach may produce in the redefinition of the tools and role of the architect. Each one of the three methods used in the research deals with data of different nature and has its respective instrument for the data gathering and analysis process, trying to achieve the triangulation of the methodological process and to cover the respective areas of inquiry (discourse & praxis).



RESEARCH OUTPUT AND SIGNIFICANCE

The research ambition is to contribute to the disciplinary discussion concerning the changing shape of architectural practice by enriching the insight over design and building processes in non-plan contexts. Seeking to provide knowledge from a different and tilted perspective that enables to revise our conventional understanding of architectural tools and roles. Besides the conventional formats of academic communication of knowledge as book/dissertation and journal articles; the output is also reflected in products such as pedagogical experiences (graduation studio and construction workshops), architectural practice by engaging with 1:1 projects; and curatorial practices by participating in three international exhibitions (Lausanne 2013, Brussels 2015, Athens and Kassel 2017).

PROJECT INFORMATION

Researcher: Oscar Andrade Castro
 Supervisor: Tom Avermaete / Klassek Havik
 Zone: Delft
 Affiliation: Technical University Delft (TUDelft)
 Pontificia Universidad Católica de Valparaíso (PUCV)
 E-mail: oscar.andrade@ead.cl
o.j.andradecastro@tudelft.nl

RELATED PUBLICATIONS

- Andrade, O., Reyes, J. (2016). *A School Made of Acts*. Journal of Performance Research Volume 21, Issue 6: On Radical Education.

Informal settlements & disaster: Coping with floods

Case study: Paipote ravine, Copiapó - Chile



In a context of water scarcity and urban expansion, a simple trigger such as the increase in precipitations can cause a disaster, unveiling the vulnerabilities present in the landscape. This research explores the dynamics of informal settlements when coping with floods, and their potential role in its mitigation.

En un contexto de deficiencia hídrica y expansión urbana, un simple detonante como el aumento en las precipitaciones, puede causar un desastre, develando las vulnerabilidades presentes en el paisaje. Esta investigación explora las dinámicas de los asentamientos informales cuando lidian con inundaciones y su posible rol en su mitigación.



WATER SCARCITY & INFORMAL SETTLEMENTS

Water scarcity is a contingent issue that affects different communities around the world, by affecting not only their food supply, but also their livelihood. The causes are multiple, due to varied, increasing and often conflicting pressures over the water resource, climate change, over-exploitation and insufficient recharge (Koundouri, 2008), making this a pressing issue.

The Copiapó valley, located on the southern edge of the Atacama Desert, has been historically an attractive area for agriculture and mining activities, but the drought that the area has experienced for the last decades, along with the overexploitation of the water resource due to the indiscriminate distribution of water rights, has created a deep social conflict and the degradation of the landscape (Skoknic, 2009).

In an already water stressed area, urban expansion only accentuates the unfavourable natural and social situation, by increasing the demand of resources, and intensifying the use of water. Informal settlements, product of the urban expansion, are considered especially vulnerable, since they commonly gather the most underprivileged segments of the population in a precarious and improvised dwelling with poor accessibility.

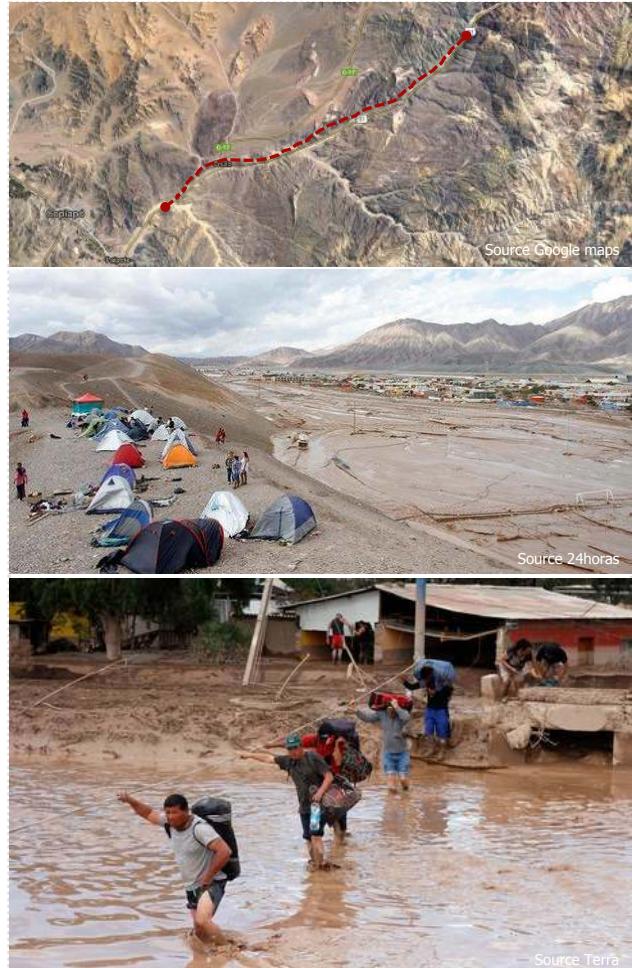
SOCIO-NATURAL DISASTERS

In addition to the existing vulnerable conditions, the occurrence of an unusual meteorological event, materializes existing risks that had not been adequately managed, in the form of a socio-natural disaster (Ferrero & Gargantini 2003). This setting was observed in April 2015, when a flood affected the Copiapó valley, altering the built and the natural landscape, and displacing thousands of inhabitants.

PURPOSE OF THE RESEARCH

Informal settlements present an opportunity when considered not only as part of the problem but potentially as part of the solution. By adopting a proactive approach towards socio-natural disasters, this research will focus on prevention and adaptation strategies, to explore how the dynamics of informal settlements when coping with floods, may inform an integrated ravine management strategy and design that contribute to the mitigation of disasters. The study case is the Paipote ravine, one of the most affected areas by the last flood.

Note: This information is part of the MSc Thesis proposal with the Landscape Architecture and Planning chair group at Wageningen University.



PROJECT INFORMATION

Researcher: Begoña Arellano Jaimerena

Supervisor (if applies):

Zone: Wageningen

Affiliation: MSc Landscape Architecture & Planning at WUR

E-mail: bego.aj@gmail.com

Personal webpage (if applies): www.linea-arch.com

Disentangling discourses and socio-ecological practices in Northern Patagonia, Chile

Implications for national and regional policy-making



In places with a predominantly natural capital, development and environmental discourses are intertwined and often competing. In these places, productive sectors and rural livelihoods are mainly determined by the state of ecosystems as well as by policy-making processes and ecosystem management. In this context, this research will explore three different aspects to contribute to understanding the trade-offs between environmental and social considerations in regional policy-making in Northern Patagonia (Chile).



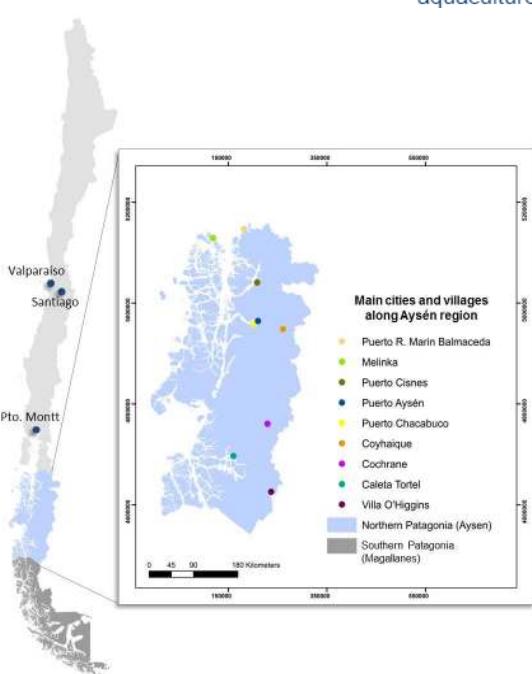
Environmental and development discourse analysis.



Analysis of socio-ecological practices related to the development of aquaculture and tourism.



Introduction of the ecosystem services framework, as a management tool within regional policy-making.



Para el año 2030, la región de Aysén apunta a convertirse en un destino internacional del turismo sustentable y consolidar el desarrollo acuícola (salmonicultura). No obstante, se carece de estudios que hayan examinado cómo la elaboración de políticas regionales y de gobernanza ambiental están siendo desarrolladas de modo de alcanzar los objetivos regionales. Se desconoce a su vez cómo los actuales instrumentos de gestión se traducen en el territorio local, especialmente aquellos enfocados en el turismo y la salmonicultura.

STUDY AREA

Patagonia, Chile stands out in the national and international context because of its natural and landscape attributes, pristine environment, remote location and wilderness. Specifically, Northern Patagonia territory is under the administration of the Aysén region, the third largest and the least populated of Chile's 15 administrative regions.

The regional economy and rural livelihood are primarily based on the extraction and management of natural resources. Aquaculture (i.e. salmon farming) and nature-based tourism are the main economic activities.

METHODOLOGY

The research is focused on decision-makers (national and regional scale), public environmental agencies and local agents (aquaculture producers, tour operators). Data collection methods:

- Semi-structured interviews with key informants
- Surveys, conducted with local tour operators located in Puerto Río Tranquilo
- Participant and non-participant observation



PROJECT INFORMATION

Researcher: Pamela Bachmann Vargas
Supervisors: Jan van Tatenhove, Kris van Koppen
Zone: Wageningen
Affiliation: Environmental Policy Group, Wageningen University UR
E-mail: pamela.bachmannvargas@wur.nl
Personal webpage: https://www.researchgate.net/profile/Pamela_Bachmann_Vargas
Funding: Programa Becas Chile, CONICYT (72150473/2014)

ONGOING RESEARCH

PhD Research 2015-2019
First fieldwork campaign: September 2016- January 2017



Cell-based bioassays for detection of marine biotoxins

Marcia Bodero PhD student, RIKILT Wageningen University and Research



The aim of this project is to develop a panel of in vitro bioassays for the detection of marine biotoxins. The neuro-2a cell bioassays are used as a first screening. Neuro-2a cells are exposed to shellfish extracts in order to detect the presence of the toxins. We also developed a second bioassay to detect diarrheic shellfish poisons based on effects on mRNA expression in the intestinal cell line Caco-2. This enabled selection of biomarkers that can be used for detection purposes using PCR.

Este proyecto pretende desarrollar un bioensayo celular para la detección de toxinas marinas ("marea roja"). Células Neuro2a son expuestas a extractos de mariscos para detectar la presencia de las toxinas. También hemos desarrollado un bioensayo para la detección de toxinas diarréicas basado en la expresión génica de genes marcadores en células Caco-2, que puede ser utilizado para la confirmación usando PCR.



BACKGROUND: The presence of marine biotoxins in shellfish is a risk for consumers and requires constant monitoring of production areas and products. In several countries (including Chile), the method of detection is the Mouse Bioassay, where mice are injected with an extract of the sample, and the occurrence of death or other toxic signs and symptoms are measured. There is a need to replace animal tests completely and harmonize the testing for marine biotoxins. In vitro bioassays based on the mode of action offer the advantage over analytical methods for being capable to detect both known and unknown compounds with a similar mode of action, but can not identify compounds. Therefore, using a combination of chemical analytical methods and bioassays is the best possibility to replace the mouse bioassay.

My project is related with the development of a replacement for the diarrhetic marine toxins (left side of the scheme, from reference 1).

STRATEGY: The possible toxins are extracted from the seafood samples using different solvents (for lipophilic, left side; or neurotoxins, right side). In a first step (number 1 in the scheme, in red), samples are tested using the Neuro2a assay. In case the sample is negative, is safe. If it is positive, it continues to the analytical method (LC/MS, the official method in the EU). If the sample is still positive and the identification is possible, then is reported. But in case the sample is negative in LCMS an positive in the bioassay, or positive in LCMS but the toxin is unknown, it has to continue to the additional confirmation (number 2, in green). Here, a specific PCR was developed, where we are able to identify some of the diarrhetic toxins, according to a gene expression profile (data not shown). Further on, the toxin can be identified using other chemical analysis (last part of the scheme).

Figure 1 (adapted from reference 2): Samples tested using Neuro2a screening. Sample 4, 6 and 10 are considered positive. The red bars represent cell viability of the sample. When cell viability is lower than 70% (cca line), the sample is considered positive. Blue bars represent the samples 5 times diluted, in order to check that there is no matrix effect, and the toxicity is due to the presence of a toxin (in very simple words)

In a third step of the project, real samples naturally contaminated and spiked samples are being tested using all the bioassays.

CONCLUSIONS:

The neuro-2a assay can be used as a first screening method for detecting marine biotoxins. Analytical methods and bioassays constitute a reliable strategy to replace the mouse bioassay.

RIKILT Strategy for replacing mouse bioassay

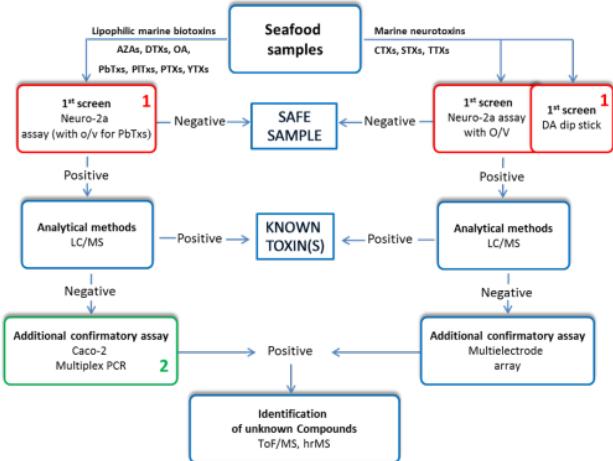
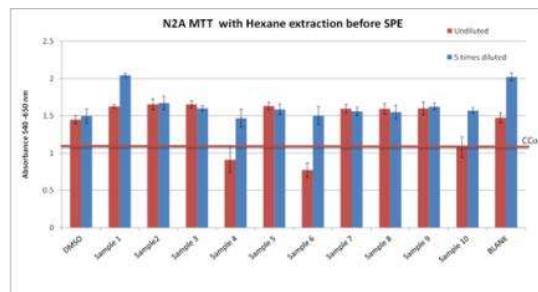


Figure 1



PROJECT INFORMATION

Researcher: Marcia Bodero
 Supervisors: Toine Bovee, Peter Hendriksen, Ivonne Rietjens
 Zone: Wageningen
 Affiliation: Rikilt Wageningen University and Research
 E-mail: marcia.bodero@wur.nl
 Personal webpage: https://www.researchgate.net/profile/Marcia_Bodero

RELATED PUBLICATIONS

- 1 Jonatan Nicolas 2015. PhD thesis "Innovative mode of action based in vitro assays for detection of marine neurotoxins"
- 2 Neuro-2a assay for the detection of lipophilic marine toxins. Bodero et al., submitted
- 3 Multielectrode array: Nicolas et al., Mol. Nutr. Food Res. 2014, 58, 2369–2378

Producing more food, with less resources and in changing environments

Quantitative methods for plant breeding



Climate change and the reduced availability of environmental resources challenge world food production. A strategy to increase crop yield is to use genetic variation to select varieties that are well adapted to target production environments. This process requires the evaluation of thousands of plants, making plant breeding slow and expensive. Quantitative methods (statistical and crop growth models) allow the integration of new technologies for genetic characterization, facilitating the identification of well adapted varieties.

El cambio climático y la menor disponibilidad de recursos ambientales dificultan la producción de alimentos. Una estrategia para aumentar los rendimientos de los cultivos es utilizar la variabilidad genética para seleccionar variedades mejor adaptadas a los ambientes de producción. Esto requiere evaluar miles de plantas, haciendo el mejoramiento lento y costoso. Métodos cuantitativos (modelos estadísticos y de cultivo) permiten integrar información de nuevas tecnologías de caracterización genética, facilitando la identificación de variedades bien adaptadas.



THE MODERN BREEDING PROCESS

- In plant breeding, parents with interesting characteristics (traits) are crossed to generate genetic variation in the progeny.
- The progeny combines traits values from the parents. Some of these combinations are advantageous for plant adaptation (larger yield).
- Breeders select future varieties based on field measurements (phenotypes) and on genotypes DNA profiles.

GENOTYPE BY ENVIRONMENT INTERACTION: A CHALLENGE FOR PLANT BREEDING

- Not all genotypes are well adapted to all environment types. E.g., some genotypes might be adapted to drought, and others to cold temperatures.
- Statistical methods allow to use meteorological information and historical yield data to identify environmental and genetic variables that drive these differences in adaptation.

USING STATISTICAL AND CROP GROWTH MODELS TO INTEGRATE NEW TECHNOLOGIES FOR PLANT BREEDING

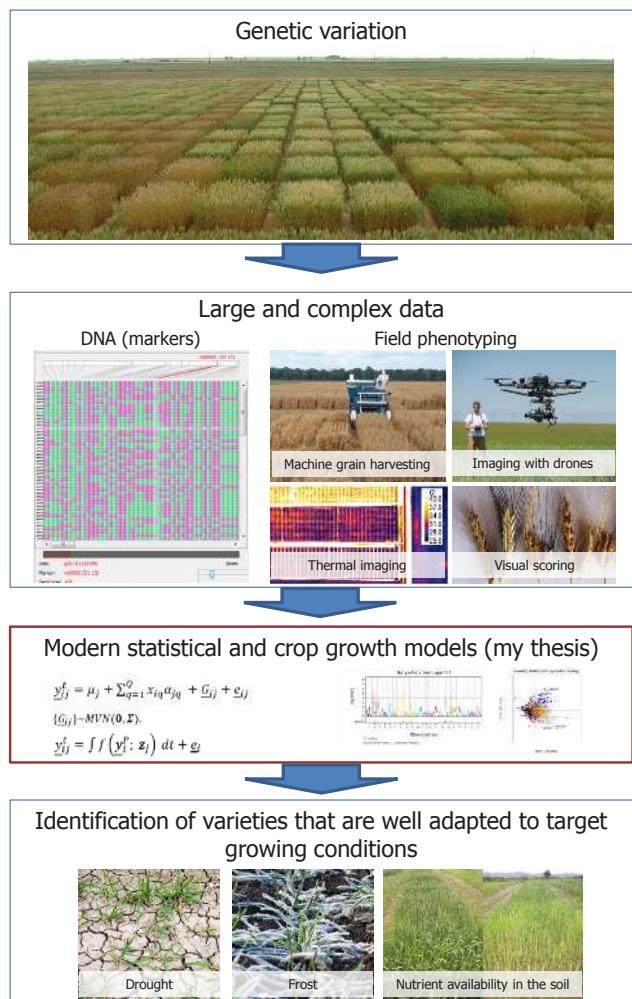
- The availability of molecular markers and high throughput phenotyping largely increases the availability of genotypic and phenotypic information.
- Statistical models allow to integrate the information, identifying genomic regions responsible for a better plant adaptation and predicting which genotypes will perform better in which environmental conditions.

IMPACT OF NEW BREEDING TECHNOLOGIES IN EUROPE

- New breeding technologies potentially allow to increase European wheat genetic gain from a 0.86% per year to a 0.95% per year. This is translated into ~14.9 M tons of additional wheat per year (~2.2 M€).

POTENTIAL APPLICATION IN CHILE

- Chile is suffering from more extreme climatic events and from a desertification that moves South. For that reason, crops are reallocated to new growing regions (e.g. wineries and fruticulture moving South).
- Statistical and crop growth models are promising tools to predict the degree of success of new crops/varieties to these new growing regions, contributing to an agriculture that is more efficient and that has lower risk of losses.



PROJECT INFORMATION

Researcher: Daniela Bustos-Korts
Supervisors: Marcos Malosetti, Fred van Eeuwijk
Zone: Wageningen
Affiliation: Wageningen UR
E-mail: daniela.bustoskorts@wur.nl

RELATED PUBLICATIONS

- Bustos-Korts, D., M. Malosetti, S. Chapman, B. Biddulph, and F. van Eeuwijk. 2016. Improvement of Predictive Ability by Uniform Coverage of the Target Genetic Space. *G3 Genes|Genomes|Genetics* 6(11): 3733–3747.
- Bustos-Korts, D., Malosetti, M., Chapman, S., and van Eeuwijk, F. 2016. Modelling of Genotype by Environment Interaction and Prediction of Complex Traits across Multiple Environments as a Synthesis of Crop Growth Modelling, Genetics and Statistics. p. 55–82. In Yin, X., Struijk, P.C. (eds.), *Crop Systems Biology - Narrowing the Gaps between Crop Modelling and Genetics*. Springer.
- Eeuwijk, F.A. van, D. Bustos-Korts, and M. Malosetti. 2016. What should students in plant breeding know about the statistical aspects of GxE? *Crop Sci.* In press.
- Malosetti, M., D. Bustos-Korts, M.P. Boer, and F.A. van Eeuwijk. 2016. Predicting Responses in Multiple Environments: Issues in Relation to Genotype × Environment Interactions. *Crop Sci.*

A market safety net: Inequality of educational opportunity in access to Higher Education in Chile



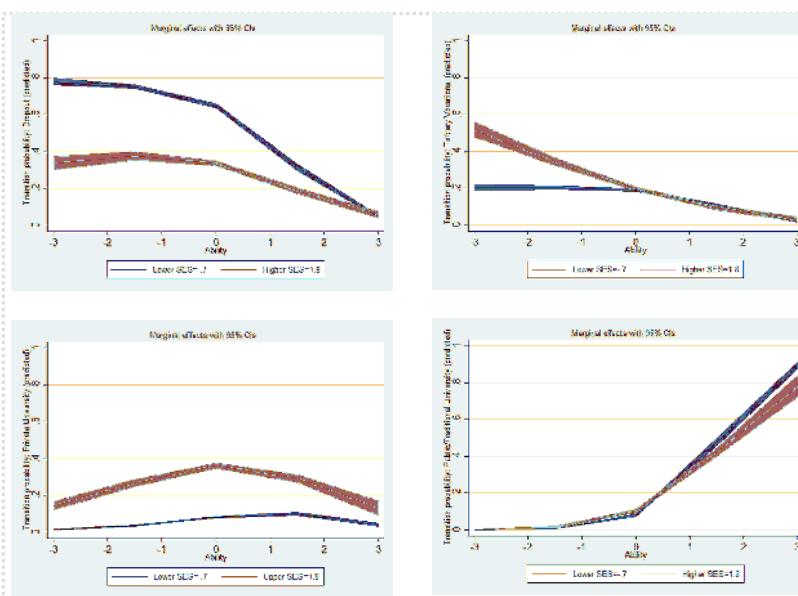
The role of academic performance and choices

Francisco Ceron, Herman van de Werfhorst and Thijs Bol. AISSR, University of Amsterdam



This study aims to determine to what extent the relationship between social origin and ability of students is conditional to class-based educational expectations to access to different paths in tertiary education. Our research questions reads as follows: What is the role of ability and family educational expectations for the explanation of To what extent socioeconomic inequalities in tertiary-level attainment in Chile?

Theoretical background: Recent work in sociology of education has established the generation of social inequalities in educational transitions as consequence of the operation of primary and secondary effects. Two aspects are still unclear: the extent to which these effects are responsible of inequality patterns among more complex set of educational options and what choice mechanisms are related to secondary effects. According to the literature, primary effects are relate to the indirect effect of social origin on educational outcomes, expressed in performance differences, and secondary effects, that refers to the direct effect of social origin in educational choices processes, once differences in academic performance are controlled



Methodology: Multinomial models with clustered standard errors. Decomposition of effects in non-linear probability models.

Data: Longitudinal census dataset (SIMCE) from an entire student cohort covering a national assessment in 10th grade and enrolment in tertiary education (SIES).

Findings: Average-ability children of high-SES families with high expectations, strategically choose to enrol into private universities to avoid downward mobility, while the golden route to public universities is chosen by high-ability children whose parents had high educational expectations, irrespective of their socioeconomic background.

PROJECT INFORMATION

Researcher: Francisco Ceron
 Supervisor (if applies): Herman van de Werfhorst, Thijs Bol
 Zone: Amsterdam
 Affiliation: AISSR, AMCIS (University of Amsterdam, www.a-id.org)
 E-mail: f.ceronacevedo@uva.nl
 Personal webpage (if applies): https://www.researchgate.net/profile/Francisco_Ceron

RELATED PUBLICATIONS

- Ceron, Francisco Ignacio (2016). *Beyond School Effects: The Impact of Privatization and Standardization of School Systems on Achievement Inequality in Latin America* (October 28, 2016). Available at SSRN: <https://ssrn.com/abstract=2885223> or <http://dx.doi.org/10.2139/ssrn.2885223>

Writing instruction in public secondary schools in Chile

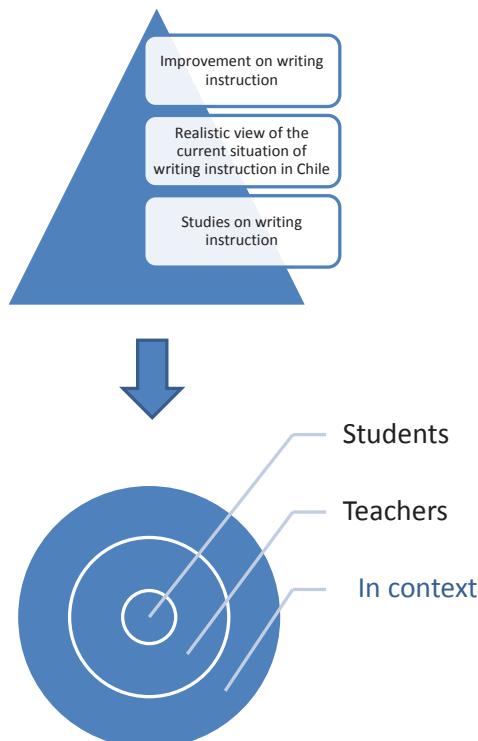
Two descriptive studies about practices and beliefs of teachers and students

Little is known about how writing is taught in the secondary level of Chilean schools. Thus, there is a need to carry out studies on writing and writing instruction in the mentioned context. With this aim, two studies are being developed in order to provide a descriptive framework that could contribute to future interventions. They focus in the two central actors of the teaching and learning process of writing: Spanish teachers and students.

Existe poca información acerca de cómo se enseña actualmente la escritura en las aulas de Lenguaje de educación media, por lo que se requieren estudios sobre el tema. Con este objetivo, se están desarrollando dos investigaciones que pretenden proveer de un marco descriptivo que contribuya a futuras intervenciones. Estos estudios se enfocan en los dos actores centrales del proceso de enseñanza y aprendizaje de la escritura: docentes de Lenguaje y estudiantes.



WHAT IS NEEDED



Study 1	Relationships among beliefs about writing, writing processes and text quality of public secondary students in Chile
Participants	7 th and 11 th grades students of public schools
Question 1	What beliefs do Chilean students of municipal schools have about argumentative writing?
Question 2	How do students' beliefs relate to writing processes and writing outcomes of argumentative texts produced by Chilean municipal secondary students?
Question 3	What similarities and differences can we find between student's beliefs about writing, writing outcomes and writing processes of argumentative texts of the two age groups?

Study 2	National survey on writing instruction in Chilean public secondary schools
Participants	Spanish teachers of public secondary schools
Question 1	What are Spanish teachers' practices regarding to writing and writing instruction?
Question 2	What are Spanish teachers' beliefs regarding to writing and writing instruction?

Graham & Rijlaarsdam, 2016

PROJECT INFORMATION

Researcher: Magdalena Flores
Supervisor: Gert Rijlaarsdam & Daphne van Weijen
Zone:
Affiliation: Universiteit van Amsterdam
E-mail:M.M.FloresFerres@uva.nl
Personal webpage:<http://www.uva.nl/over-de-uva/organisatie/medewerkers/content/f1/m.m.floresferres/m.m.floresferres.html>

RELATED PUBLICATIONS

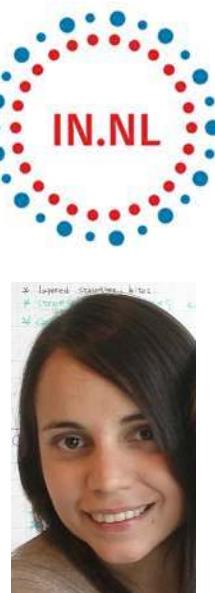
- Cutler, L. & Graham, S. (2008) Primary Grade Writing Instruction: A National Survey. *Journal of Educational Psychology*, 100, 4, 907-919.
Graham, S. & Rijlaarsdam, G. (2016) Writing Education around the Globe: Introduction and Call for a New Global Analysis. *Reading and Writing*, 29(5), 781-792.

Consumer food choice

Analysing consumer food choice and perceived quality of international traditional products

The food industry works hard to develop food products that meet consumer's requirements from all over the world. However, it is a tough task due to their wishes and needs are influenced by dynamic factors, namely food culture and new trends, which often is translated into a high failure of new products launched on the market. For this reason, this research aims at understanding which parameters do consumers take into account when shopping in order to develop successful products that meet/exceed the needs of each target group.

La industria alimentaria trabaja arduamente para desarrollar productos que satisfagan los requerimientos de los consumidores a nivel mundial. Sin embargo, es una tarea difícil ya que sus deseos y necesidades son afectados por factores dinámicos, tales como cultura alimenticia y nuevas tendencias, lo cual se traduce en la alta tasa de fracaso de nuevos productos en el mercado. Por esta razón, la investigación está orientada a entender los parámetros considerados por los consumidores al momento de compra, con el fin de desarrollar productos que cumplan/excedan las necesidades del público objetivo.



Consumers and product familiarity

Next to information concerning production conditions and sensory properties, product familiarity plays an important role in the food choice process. Familiarity is related to personal product-related experiences namely knowledge, purchasing, consumption, and product typicality, i.e., how representative is of its overall category. It can be hypothesized that consumers having different familiarity levels prioritize differently both intrinsic and extrinsic quality parameters of the product (Bredahl, 2003; Banović *et al.*, 2012). In this respect, familiarity becomes a key aspect determining the choice for a certain product.

In our previous work, we analysed the perceptions and preferences among consumers with a different familiarity level on canned whole peeled tomatoes (Frez-Muñoz *et al.*, 2016). The research considered the level of familiarity based on knowledge, frequency of consumption, and availability of this product in three markets: (1) Chile (low); (2) The Netherlands (medium); and (3) Italy (high). The key quality attributes considered by them when choosing this product were identified, being colour of tomatoes the most important intrinsic quality attribute, and packaging material (Chileans and Dutch) and country of origin (Italians) the key extrinsic quality attributes (Fig. 1). The results of this research are valuable for the industry suggesting that to generate added value products different intrinsic and extrinsic quality attributes are relevant depending on the consumer familiarity with this product.

PhD project

Globalisation has strongly influenced the internationalisation of several commodities and services, including food. However, little is known about the parameters considered by consumers having a different level of familiarity with international traditional food products. In my PhD project, I would like to take one step further to analyse the perceived quality of typical Chilean products, e.g. copihue and maqui, by international markets in order to add them value based on the needs of each target market.

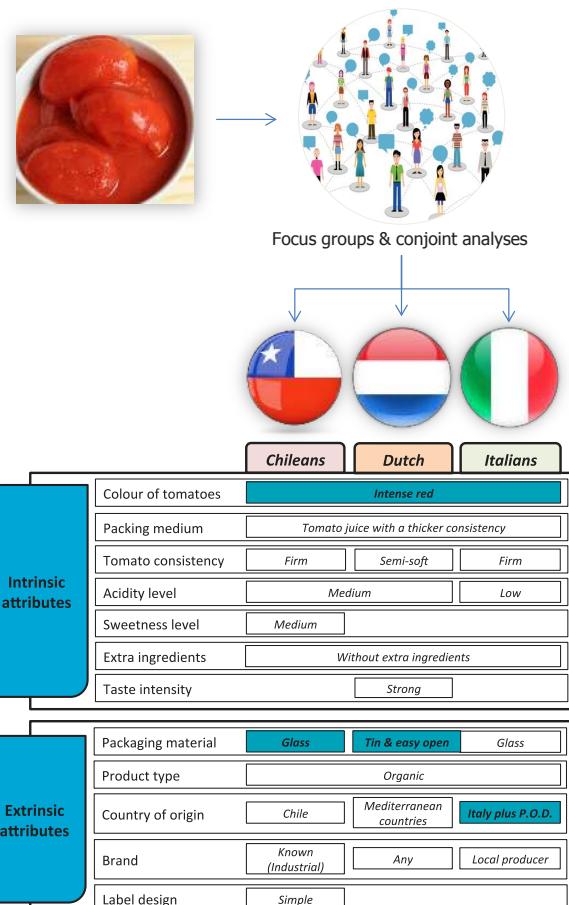


Figure 1. Similarities and differences in preferences on CWPT by Chileans, Dutch, and Italians.

PROJECT INFORMATION

Researcher: Lucía Frez Muñoz

Supervisor: Prof. Vincenzo Fogliano and Dr. ir. Bea Steenbekkers

Zone: Wageningen

Affiliation: Food Quality and Design Group, Wageningen University & Research

E-mail: lucia.frezmunoz@wur.nl

Personal webpage: linkedin.com/in/luciafrez

RELATED PUBLICATIONS

- Banović M, Fontes MA, Barreira MM, Grunert, K G. (2012). Impact of product familiarity on beef quality perception. *Agribusiness* 28:157-72.
- Bredahl L. (2003). Cue utilisation and quality perception with regard to branded beef. *Food Quality and Preference* 15:65-75.
- Frez-Muñoz L, Steenbekkers BLPA, Fogliano V. (2016). The choice of canned whole peeled tomatoes is driven by different key quality attributes perceived by consumers having different familiarity with the product. *Journal of Food Science* 81:(12) S2988-S2996.

Improving the current vaccine development

Evaluation of T cell activation by vaccine-stimulated Dendritic cells in vitro.

The current strategies for vaccine development relies on animal experimentation, often poorly correlated with the human response elicit upon vaccination. Development of new approaches to test vaccine immunogenicity prior to human trials shows up as alternatives for vaccine development. Our project is based on the establishment of an *in vitro* system to test immune response after vaccination and further identification of biomarkers for vaccine immunogenicity.

Las estrategias actuales para el desarrollo de vacunas se basan en experimentación animal, a menudo pobremente correlacionada con la respuesta en humanos después de la vacunación. El desarrollo de nuevas estrategias para evaluar la inmunogenicidad de vacunas previo los ensayos en humanos, aparece como alternativa para el desarrollo de vacunas. Nuestro proyecto esta basado en el establecimiento de un sistema in vitro que permita evaluar la respuesta inmune después de la vacunación y posterior identificación de bio-marcadores para la inmunogenicidad de vacunas.

Background

The vaccine effectiveness relies on the ability to elicit a robust immune response upon infections. In this context, the efficient activation of the innate immune system by vaccines is the key to the later development of adaptive immune response. Dendritic Cells (DCs) play a pivotal role, since they can sense local environment and later on, activate the adaptive immune system, such as T and B cells, by antigen presentation.

However, the current strategies to develop vaccines are based on animal testing, which are poorly correlates with the real life human immune response. Interestingly, recent findings in our lab using Peripheral Blood Mononuclear Cells (PBMCs) shows differential response of DCs under stimulation with two different influenza commercial vaccines: Whole Inactivated virus (WIV) and Sub-Unit (SU) vaccines.

Hypothesis and aims

An *in vitro* human DC-T cell system can be used to assess the development of T cell immunity comparing different influenza vaccine formulates.

- To evaluate T cell activation *in vitro* by DCs stimulated with different vaccine formulations
- To assess the type of response from CD8 and CD4 T cells



Experimental approaches

Evaluation of T cell activation using *in vitro* vaccine-stimulated DCs. DCs will be stimulated with two different vaccine formulates in order to assess the consequent T cell response. WIV and SU stimulated-DCs will be co-cultured with T cell coming from the same donor and therefore, surface markers will be evaluated using flow cytometry (See Figure 1). Moreover, T cell proliferation will be assess using CFSE proliferation assay.

Characterization of T cell phenotypes. In order to dissect which kind of response is being triggered with the different vaccine formulations cytokine production profile will be assessed using ELISpot technology. Moreover, to evaluate the possible mechanisms behind T cell activation, we will evaluate by qRT-PCR the expression of genes involved in antigen presentation by DCs. (See Figure 1).

Expected results

We expect different pattern of activation and maturation markers in T cells co-cultured with differentially stimulated DCs. Since WIV is a self-adjuvanted vaccine, a stronger and broader T cell activation and proliferation are expected.

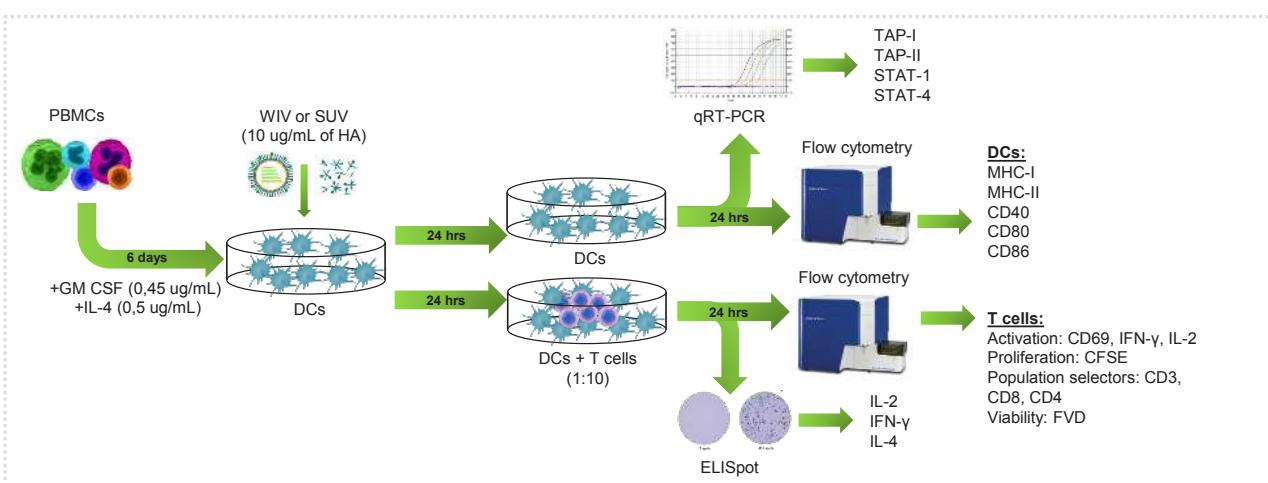


Figure 1. Experimental approaches. DCs stimulation and T cell activation/proliferation assay.

PROJECT INFORMATION

Researcher: Martín González
Supervisor (if applies): Gabriela Tapia, Anke Huckriede
Zone: Groningen
Affiliation: UMCG
E-mail: m.i.gonzalez@student.rug.nl
Personal webpage (if applies):

RELATED PUBLICATIONS

- *Abul K. Abbas, Andrew H. H. Lichtman, Shiv Pillai. (2009) Cellular and Molecular Immunology, ISBN-10: 1437715281*
- *Stoel M, Pool J, de Vries-Idema J, Zaaraoui-Boutahar F, Bijl M, Andeweg AC, Wilschut J, Huckriede A. (2015) Innate responses induced by whole inactivated virus or subunit influenza vaccines in cultured dendritic cells correlate with immune responses *in vivo*. PLoS One. doi: 10.1371/journal.pone.0125228*
- *Gabriela Tapia-Calle, Maaike Stoel, J. D. V. I. & A. H. Distinctive responses in an *in vitro* human dendritic cell-based system upon stimulation with different influenza vaccine formulations. Submitted*

The Institutional Framework of Urban Struggles

Governance and Contention in Santiago de Chile

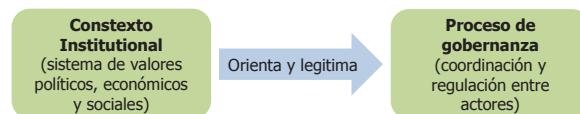
The objective of this paper is to clarify the analysis of political-institutional context as an explanatory factor of the cycles of contentious actions around urban issues. Specifically, I seek to study how neoliberalization of urban governance affects the emergence of urban-oriented mobilizations and how it shapes activists' claim-making strategies. In order to develop this arguments I present a brief socio-historical analysis of the cycles of urban struggles in Santiago de Chile since the mid-twentieth century to the present.

El objetivo de este artículo es profundizar en el análisis del contexto político-institucional como un factor explicativo de los ciclos de acción contenciosa en torno a problemáticas urbanas. Específicamente, se analiza cómo los procesos de neoliberalización de la gobernanza urbana inciden en el surgimiento de las movilizaciones urbanas y cómo configura las estrategias de movilización de los activistas urbanos. Para desarrollar estos argumento presento un breve análisis socio-histórico de los ciclos de luchas urbanas en Santiago de Chile desde mediados del siglo XX hasta nuestros días.



INTRODUCCIÓN

1. Hacia un "giro institucionalista" de la Gobernanza Urbana

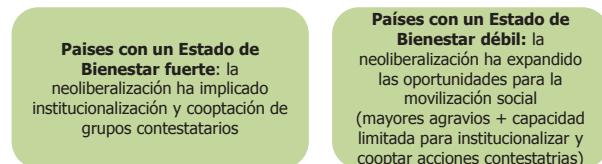


2. El Urbanismo Neoliberal como Modelo de Gobernanza Urbana

Urbanismo neoliberal: "a framework that powerfully structures the parameters for the governance of contemporary urban development—for instance, by defining the character of 'appropriate' policy choices, by constraining democratic participation in political life, by diffusing dissent and oppositional mobilization, and/or by disseminating new ideological visions of social and moral order in the city" (Brenner & Theodore, 2005, p. 103).



3. Luchas urbanas en el contexto del Urbanismo Neoliberal (experiencia europea)



CASO DE ESTUDIO: URBANISMO NEOLIBERAL Y LUCHAS URBANAS EN SANTIAGO DE CHILE

Ciclos de luchas urbanas en Santiago de Chile:

1. Emergencia del Movimiento de Pobladores (1957-1970)
2. Politización del Movimiento de Pobladores (1970-1973)

3. Desmovilización de las luchas urbanas (1973 – mediados de 1990)

4. Nuevo ciclo de luchas urbanas en el contexto del urbanismo neoliberal (desde mediados de 1990)

ANÁLISIS: CICLOS DE LUCHAS URBANAS

Ciclo 3: Desmovilización de las luchas urbanas (1973–1995)

Dimensión Económica	Dimensión Política
Contexto socio-político: (a) Diktadura Militar; (b) Transformación socio-económica; (c) Transición a la democracia	
Dictadura Militar: Intalación del Urbanismo neoliberal: - Liberalización mercado del suelo urbano. - Planificación urbana ajustada a requerimientos del mercado. - Política de vivienda social basada en el subsidio a la demanda.	Dictadura Militar: Clausura de oportunidades políticas para la movilización social (represión política, fragmentación del Movimiento de Pobladores)
Gobiernos democráticos: mantenición gobernanza urbana neoliberal, pero haciendo cargo de "deficit sociales" (éxito cuantitativo de la vivienda social)	Gobiernos democráticos: transición política pactada: (desmovilización de actores sociales)
Ciclo de luchas urbanas: - Desmovilización y despolitización de acciones contestatarias en torno al acceso al suelo y la vivienda. - Estrategia de sectores populares para acceder a la vivienda: de la ocupación de terrenos al allegamiento. - Políticas de subsidio habitacional: reemplazo del "poblador" por el "beneficiario/deudor" (Skewe, 2005)	

Ciclo 4: Apertura de un nuevo ciclo de luchas urbanas (desde mediados de 1990)

Dimensión Económica	Dimensión Política
Mantención gobernanza urbana neoliberal	- Sistema democrático con bajos niveles de participación ciudadana. - Autonomía entre sistema político y movimientos urbanos. - Formas difusas de control de las acciones contestatarias: fragmentación de demandas, tecnicización de conflictos urbanos, limitación institucional de la participación.

Ciclo de luchas urbanas:

- Cambio cualitativo:** nuevas problemáticas urbanas más allá de la lucha por la vivienda; complejización de las reivindicaciones (participación ciudadana y reconocimiento); diversidad socioeconómica de los actores y dispersión territorial.
- Reivindicaciones:** la demanda por vivienda social se centra en la localización ("permanencia territorial"); participación ciudadana en la planificación urbana; revalorización de los barrios como fuente de identidad local (patrimonio material e inmaterial)
- Sin embargo, son luchas urbanas locales y particularistas (fragmentadas en espacio y tiempo).**

PROJECT INFORMATION

Researcher: Sebastián Ibarra González

Supervisor (if applies): Jan Rath (University of Amsterdam) and Walter Nicholls (University of California, Irvine)

Zone: Amsterdam

Affiliation: Amsterdam Institute for Social Science Research (AISRR), University of Amsterdam

E-mail: s.i.ibarragonzalez@uva.nl

RELATED PUBLICATIONS

Ibarra, S. (2015). The Institutional Framework of Urban Struggles: Governance and Contention in Santiago de Chile. In E. Gualini, J. Mourato, & M. Allegri (Eds.), *Conflict in the city. Contested Urban Spaces and Local Democracy*. Berlin: Jovis.

Almacenamiento y descomposición morfológica en Holandés

Automatic, unconscious processing of Dutch morphosyntax in native and L2 speakers of Dutch



The purpose of this project is to probe the first milliseconds of processing of morphologically complex words and phrases in Dutch, to see exactly what type of information is processed automatically and unconsciously, and which type of linguistic information is dealt with by later, more conscious and controlled processes. An important goal of this project is also to see how native and L2 speakers differ (if they do) with respect to mechanisms used for each type of linguistic information and the time course for each process.

MARCO TEORICO

Almacenamos palabras morfológicamente complejas como una sola unidad (perros), o mediante sus elementos constitutivos? (es decir, sus morfemas: perro + s).



Evidencia conductual indica que hablantes de Holandés no descomponen palabras complejas (Schreuder, 2003). Sin embargo, hay evidencia teórica (Marantz, 2013) y experimental (Rastle & Davis, 2008) de procesamiento basado en la descomposición en otros lenguajes.

PREGUNTAS DE INVESTIGACION

Que palabras con almacenadas como unidades y que palabras son descompuestas en el procesamiento léxico del Holandés?

Podemos obtener respuestas neurofisiológicas (mismatch negativity – MMN) que representen el grado de consolidación neuronal de representaciones lingüísticas?

MATERIALES Y DISEÑO

- 14 hablantes nativos de holandés
- Paradigma odd-ball con estímulos standard y deviant
- Dos palabras monomorfémicas y dos palabras morfológicamente complejas
- Palabra de alta y baja frecuencia por cada condición
- Pseudopalabras para cada estímulo experimental que controla diferencias acústicas

CONCLUSION

Hablantes de holandés ocupan diferentes mecanismos cognitivos para el procesamiento de sustantivos singulares y plurales

Falta de resultados similares en holandés probablemente se debe a la insensibilidad temporal de las tareas usadas.

La frecuencia de palabras no parece repercutir en la respuesta MMN, probablemente debido a lo temprano y automático de la respuesta.

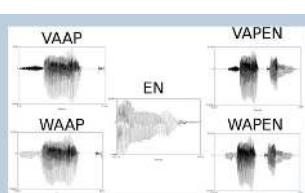


Figure 1: Construcción de estímulos

Block	Estímulo
Block 1	WAPEN
Block 2	BOEKEN
Block 3	VAPEN
Block 4	TOEKEN
Block 5	BAKEN
Block 6	DOEKEN
Block 7	PAKEN
Block 8	GAKEN

Table 1: Iraalje Experimenteel

Resultados



Figure 2: Diferencia entre MMN para una palabra monomorfémica y su control acústico



Figure 3: Diferencia entre MMN para una palabra morfológicamente compleja y su control acústico

MMN como herramienta para medir el grado de consolidación de representaciones neuronales

- Análisis mediante *linear mixed effects model* (paquete lmer en R)
- Palabras monomorfémicas produjeron MMN más grandes que sus pseudopalabras control. 0.845 microvoltios de diferencia entre palabras y pseudopalabras ($SE=0.25, t=3.149$)
- Palabras morfológicamente complejas no producen MMN estadísticamente diferentes de sus pseudopalabras control.
- Evidencia de que en Holandés la complejidad morfológica de la palabras determina el mecanismo cognitivo mediante el cual estas se procesan.

PROJECT INFORMATION

Researcher: Hernan Labbe Grunberg
Supervisor: Fred Weerman and Judith Rispens
Zone: Amsterdam
Affiliation: University of Amsterdam
Amsterdam Center for Language and Communication
E-mail: h.a.labbegrunberg@uva.nl

RELATED PUBLICATIONS

Adolescent Substance Use Disorder in Chile

The role of the family in the maintenance and abstinence



Summary: In 2013, more than 4,300 younger under 25 year old received drug treatment within the Chilean National Treatment Program. However, despite of the problems of these adolescents n begin in or are produced by their family context, all programs are focused on personal factors. The general aim is to improve the drugs treatment programs for adolescents in Chile, through the enhancement of the intervention with their families.

Resumen: En el año 2013, más de 4.300 jóvenes menores de 25 años accedieron a tratamiento en el Programa Nacional para El Consumo Problemático de Drogas chileno. No obstante, a pesar que la mayoría de los problemas de éstos jóvenes comienzan en o se producen dentro del contexto familiar, los programas de tratamiento se focalizan en la intervención de factores personales. El objetivo general es mejorar los programas de tratamiento para adolescentes, a través de la intervención con sus familias.



RESEARCH QUESTION

What familial factors are more strongly related to young drug problem use within the Chilean context?

RESEARCH DESIGN AND METHODS

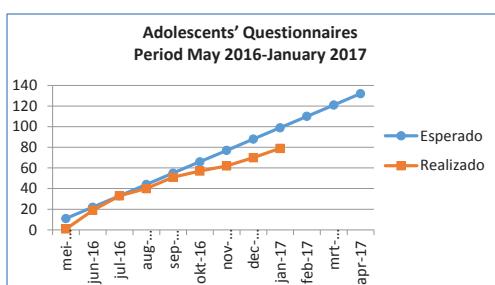
The research design consider three main areas:

1. Parental factors related to substance use disorder (SUD) in Chilean Young Offenders in drug treatment. Self-reports questionnaires for adolescents about parental factors, adolescent psychological factors and adolescent drug use.
2. Parents/tutors' perceptions related to their relation with the young offender in treatment, their problems and needs. Semi-structured interviews for parents/tutors.
3. Drug treatment professionals' perceptions related to young offenders' families and tutors, as well the intervention they carry out with them. Semi-structured interviews with clinicians.

EXPECTED OUTCOMES

1. Identification of the parental factors associated with the maintenance and abstinence of drug use in young offenders in treatment.
2. Discussion with the treatment teams about the significance and usefulness of the research findings.
3. Inclusion of some findings in the National guidelines for drug treatment, developed by the National Service for Prevention and Treatment of Drugs and Alcohol (SENDA) and or within the treatment programs.

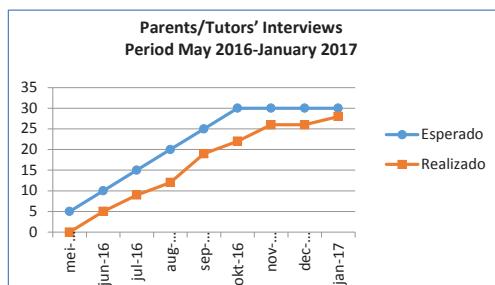
CURRENT FIELDWORK



1. Parental factors related to SUD.

79/130 questionnaires have been carried out with young offenders between 14 and 24 years old, since June 2016 until April 2017.

Logistic regressions will be conducted.



2. Parents/tutors' perceptions.

28 semi-structured interviews have been conducted with adults accompany young offenders in treatment, since June 2016 until March 2017.

Content analysis will be carried out.

3. Drug treatment professionals' perceptions.

18 semi-structured interviews were conducted with professionals/clinicians from 18 treatment teams working in the Capital (Santiago City), during May 2017.

Content analysis is carried out, using ATLAS.ti with two independent coders.

PROJECT INFORMATION

Researcher: Mónica Lobato Concha
Supervisor: Robbert Sanderman, Mariët Hagedorn
Zone: Groningen
Affiliation: University Medical Center Groningen/University of Groningen
E-mail: lobatoc.monica@gmail.com

RELATED PUBLICATIONS

- Lobato, M., Sanderman, R., Pizarro, E. et al. (2017) Marijuana Use and Dependence in Chilean Adolescents and Its Association with Family and Peer Marijuana Use.. *International Journal of Behavioral Medicine*, 24(1), 144-152. DOI: 10.1007/s12529-016-9595-2

Dual-Band Observations with ALMA

Implementation of an Optical Beam Combiner Assembly

The aim of this project is to study the feasibility, practical implementation and benefits of simultaneous multi-band beam-combined observations with Atacama Large Millimeter/submillimeter Array (ALMA), by means of external optics on a few baselines employing existing ALMA receivers. In particular, we propose to investigate a combination of the existing Bands 6 (211–275 GHz) and 9 (602–720 GHz) receivers.

El objetivo de este proyecto radica en estudiar la factibilidad, implementación práctica y beneficios de observaciones simultáneas de haces combinados usando multibandas con el Atacama Large Millimeter/submillimeter Array (ALMA), por medio de óptica externa en unas pocas baselines utilizando los receptores de ALMA existentes. En particular, proponemos investigar una combinación de bandas existentes, específicamente la Banda 6 (211-275GHz) y la Banda 9 (602-720GHz).



SCIENTIFIC BENEFITS

Improved phase calibration for the high band, in the case of low atmospheric water vapor content where the conventional phase correction scheme using the water vapor radiometers breaks down.

Observation of transient phenomena that occur over wide frequency ranges, by eliminating the overhead of band switching, exemplified here by the possibility of ground-breaking new research on the solar chromosphere.

Increased observation speed by overlapping multi-band observations, effectively providing the lower band's observation "for free"; this especially will speed up spectral line surveys, and is also likely to improve the calibration of line ratios.

OPTICAL DESIGN

A prototype has been made in Zemax within the ray optics formalism. The idea is to reflect the spectrum of the Band 6 and then redirect it to its respective window by this optical system. The system (shown in figure 1) is composed by: a dichroic filter, 2 elliptical mirrors and a flat mirror.

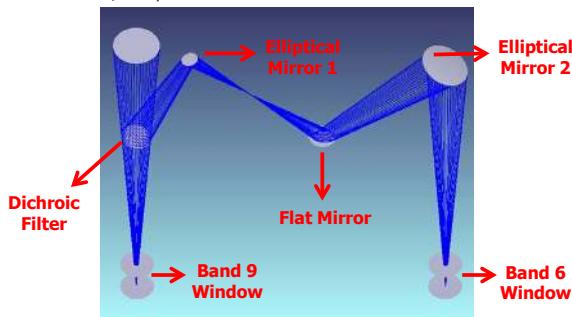


Figure.1- Representation of the designed optical beam combiner assembly.

SUMMARY

My study shows that the available space is enough to mount this beam combiner system. The optical design has been made attempting to keep beam distortion as low as possible due to using two elliptical mirrors.

FUTURE WORK

We will study, in collaboration with the ALMA engineering team, how the assembly can be mounted on the front end cryostat without requiring permanent modifications of the latter.

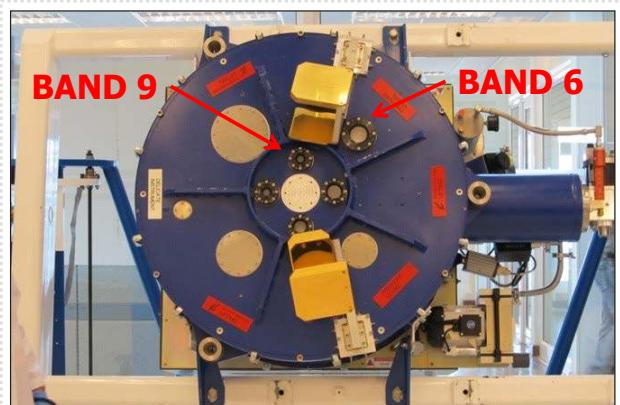


Figure.2- ALMA cryostat seen from top. The picture shows the layout of the bands and indicates the location of Bands 6 & 9.

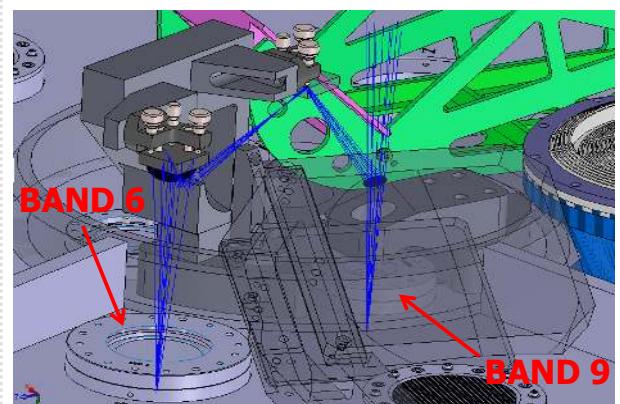


Figure.3- Rendering of the optical beam combiner assembly designed by Zemax software.

PROJECT INFORMATION

Researcher: Daniel Montofré

Supervisors: Patricio Mena (U. de Chile), Andrey Baryshev (U. of Groningen)

Zone: Groningen

Affiliation: PhD student

E-mail: d.a.montofre@rug.nl

Personal webpage: N.A

RELATED PUBLICATIONS

Brain mechanisms in Depression

Neurotransmission and Neuroinflammation in depressive symptoms and stress in an animal model.

This project aims to identify the different brain mechanisms and their interaction, involved in the pathology of depression, including neurotransmission, chronic stress and neuroinflammation processes. Combining Pharmacological manipulation and brain imaging (PET imaging), different changes between neurotransmitter receptors and neuroinflammation markers will be detected when comparing Naïve animals with an animal model of depression.

En este proyecto se identificarán los diferentes mecanismos y sus interacciones, asociados al desarrollo de la depresión, incluyendo los neurotransmisores, el estrés crónico y los procesos neuroinflamatorios. Combinando técnicas de manipulación farmacológica e imagenología en el cerebro (PET imaging), se espera identificar diferentes cambios en receptores de neurotransmisores y marcadores de neuroinflamación comparando animales naïve con un modelo animal de depresión.

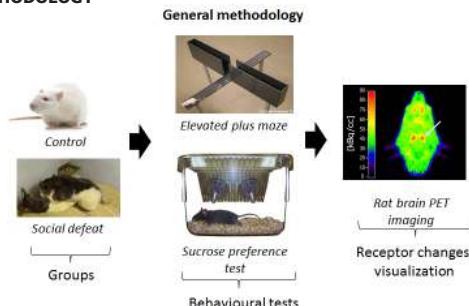


BACKGROUND

According to the World Health Organization (WHO), around 350 million people suffer from depression around the world, and predictions indicate that by 2020, this pathology would be the second cause of disability (1). The majority of depressed patients experience a poor response to antidepressants (treatment resistance, partial effects) (2).

Many mechanisms and molecules interacts in the pathology of depression, including neurotransmitters, stress hormones, and neuroinflammation among others. This allows the possibility of searching new therapies for this psychiatric disorders, pointing to the modulation of these molecules dynamics.

METHODOLOGY



To induce depressive symptoms, a social defeat model in rats will be used. To assess changes in anxiety and depressive-like behavior, Elevated plus maze and Sucrose preference test will be used. PET scan will assess different markers changes in different areas of the brain. Pharmacological intervention may be used before behavior to see changes in both behavior and markers.

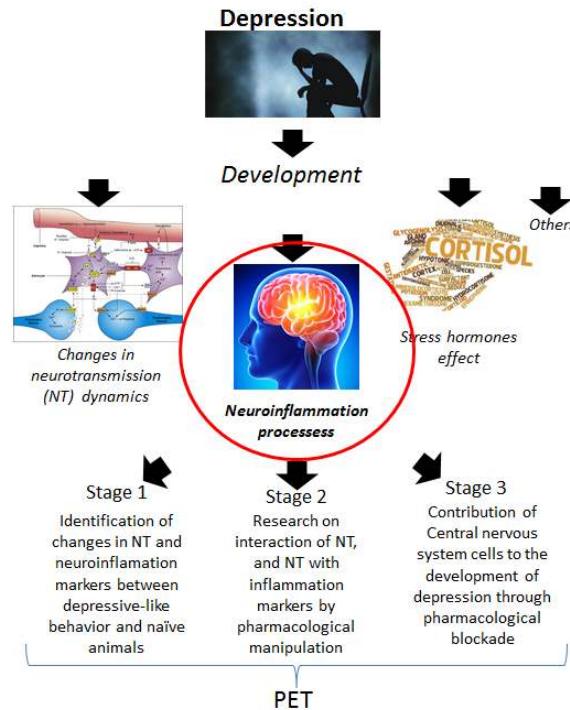
FUTURE INSIGHTS

In this research we want to focus mainly in the relationship between neurotransmitters and stress hormones in the neuroinflammation markers changes in depression. To do this, we will identify significant changes between the 2 conditions and the main player areas, and then we will administrate different agonists or antagonists of different molecules to see the changes in the dynamics of the brain.

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PROPOSAL



- In a first stage, we will identify the changes in different markers between animals with and without depressive symptoms. With this information, we will select the most relevant markers (based on their changes) and will try to see the effect of the administration of different agonists and antagonists of different brain receptors to determine their effect in other receptors or neuroinflammation markers availability, so we can determine the interaction effects on the molecular dynamics. Finally, using pharmacological drugs, we will block the specific activity of the Central nervous system cells (neurons, astrocytes, microglia) and determine if the behavioral and PET outcome can be blocked, so we will be able to determine the specific contribution of each cell to the development of depression.

PROJECT INFORMATION

Researcher: Rodrigo Moraga Amaro
 Supervisor (if applies): Erik de Vries (RUG) – Janine Doorduin (RUG)
 Zone: Groningen
 Affiliation: RUG - UMCG
 E-mail: rod.moraga26@gmail.com
 Personal webpage (if applies): linkedin.com/in/rodrigo-moraga-amaro-7a86b4a2

RELATED PUBLICATIONS

- Moraga-Amaro R, Jerez-Baraona JM, Simon F, Stehberg J. (2014). Role of astrocytes in memory and psychiatric disorders. *J Physiol Paris*. 108(4-6):240-51.
- Orellana JA, Moraga-Amaro R, Díaz-Galarce R, Rojas S, Maturana CJ, Stehberg J, Sáez JC. (2015). Restraint stress increases hemichannel activity in hippocampal glial cells and neurons. *Front Cell Neurosci*. 2;9:102.
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Seismic Energy & Tall Buildings

Distribution of Seismic Energy Outrigger Structures with Passive and Semiactive Dampers

When subjected to strong earthquakes, building structures equipped with damped outriggers may undergo plastic deformations before or while the dampers begin to work. Consequently, both the host structure's hysteretic behaviour and the dampers' performance need to be evaluated in parallel. This research provides an analytical framework to assess the distribution of seismic energy in tall buildings equipped with passive viscous dampers and semiactive magneto-rheological (MR) dampers.

En presencia de grandes terremotos, edificios construidos con estabilizadores (*outriggers*) equipados con amortiguadores pueden presentar deformaciones plásticas, durante o incluso antes de que los amortiguadores funcionen. Por ello es necesaria la evaluación simultánea de la histéresis de la estructura y el comportamiento de los amortiguadores. Esta investigación provee de un marco analítico para la evaluación de la distribución de energía sísmica, en edificios altos equipados con amortiguadores viscosos y amortiguadores magneto-reológicos semiactivos.

ENERGY BALANCE EQUATION

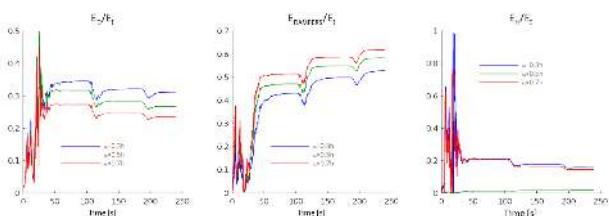
The earthquake input energy transmitted to a structure is related to the kinetic energy, elastic strain energy, damping energy, hysteretic energy and dampers energy. the energy balance equation for a MDOF system is given by

$$E_K + E_S + E_D + E_{DAMPERS} + E_H = E_I$$

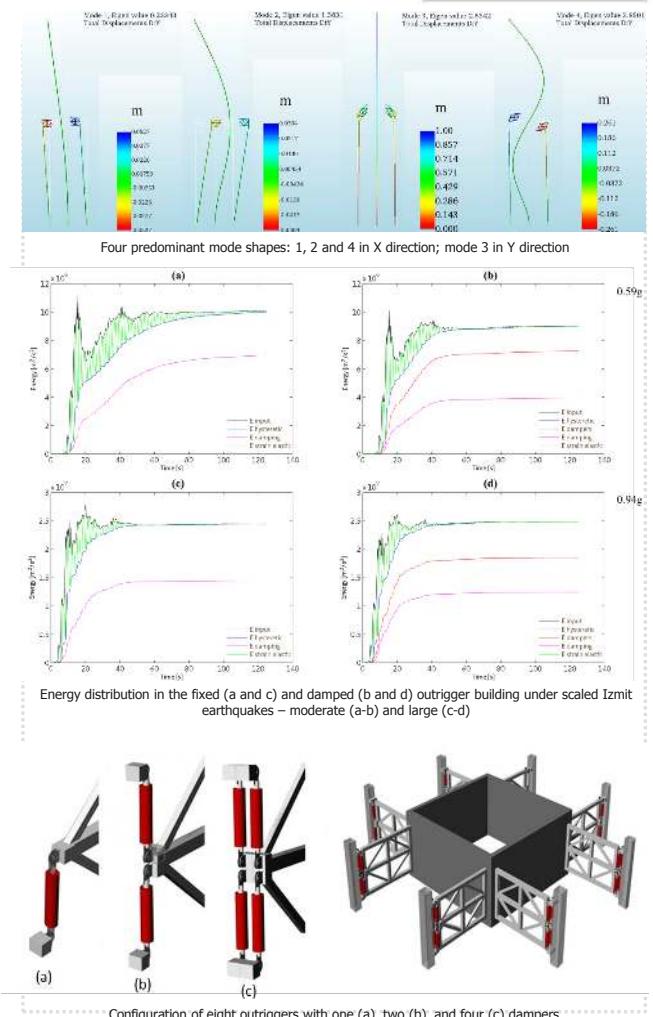
where EI is the energy input at foundation of the building, EK is the kinetic energy, ES is the elastic strain energy, ED is the energy dissipated through damping; EH is the energy dissipated through hysteretic plastic deformation, and EDAMPERS is the energy dissipated through the viscous dampers.

METHODOLOGY

The energy assessment is based on the numerical study of 60-storey buildings equipped with conventional outriggers, and passive/semiactive damped outriggers, respectively. First, a parametric study addresses the influence of building natural period, position of the outrigger, damping coefficient, and stiffness ratio core/perimeter columns in the control performance of the outrigger structures. Secondly, the inter-dependency between structural properties of tall buildings equipped with damped outriggers and ground motion characteristics is examined under three long-period earthquake records. These ground motions are scaled to small, moderate and strong earthquakes to determine the nonlinear threshold. The distribution of seismic energy is based on the demand of total input energy – EI. Maximum damping and hysteretic energies permit to evaluate the energy dissipation capacity to limit structural damage. These relationships can be expressed by (a) the hysteresis energy ratio EH/EI; (b) Damping energy ratio ED/EI; and (c) Supplemental damping ratio EDAMPERS/EI.



The purpose is to determine whether it is correct to assume that main structural components will remain elastic during the entire response of the building. In other words, to determine if the energy dissipation due to hysteresis can be fully replaced by energy dissipated through the action of dampers.



PROJECT INFORMATION

Researcher: Mauricio Morales Beltran
Supervisor (if applies): Prof.Dr.ir. Joop Paul
Zone: Delft
Affiliation: TU Delft
E-mail: m.g.moralesbeltran@tudelft.nl
Personal webpage (if applies):

RELATED PUBLICATIONS

- Distribution of strong earthquake input energy in tall buildings equipped with damped outriggers; M. Morales-Beltran, G. Turan, U. Yildirim and J. Paul; under review in The Structural Design of Tall and Special Buildings*
- Technical Note: Active and Semi-Active Strategies to Control Building Structures Under Large Earthquake Motion; M. Morales-Beltran and J. Paul; Journal of Earthquake Engineering Vol. 19 , Iss. 7, 2015*
- Distribution of Large-earthquake Input Energy in Viscous Damped Outrigger Structures; M.G. Morales-Beltran, G. Turan, U. Yildirim; 16th World Conference in Earthquake Engineering, (16WCEE), Santiago Chile, January 9th to 13th 2017*

ROLE OF BITTER TASTE RECEPTORS IN GLP-1 STIMULATION AND T2D

PhD project

Obesity and type-2 Diabetes (T2D) prevalence increase has motivated interest in the hormone Glucagon-like peptide 1 (GLP-1) since its function after meal intake leads to satiety sensation, promotes insulin activity and also glycaemia control. Food components detected by receptors in the intestines activate the GLP-1 secretion and, particularly, bitter taste receptors activation would promote GLP-1 function and control of T2D complications.

El aumento de la prevalencia de Obesidad y la Diabetes tipo 2 (T2D) ha motivado interés sobre la hormona *Glucagon-like peptide 1* (GLP-1), ya que su función después de la ingesta de alimento conduce a sensación de saciedad, promueve la actividad de la insulina y también el control de la glucemia. Los componentes de los alimentos detectados en los intestinos comandan la secreción de GLP-1 y, particularmente, la activación de receptores de amargor promovería la función de GLP-1 y el control de las complicaciones de T2D.



Currently, several options for the treatment of Diabetes are available, although optimal glycemic control is often not achieved, and hypoglycemia and weight gain are still associated with medications. Glucagon-like peptide 1 (GLP-1)-based therapies affect glucose control through the enhancement of insulin secretion, slower gastric emptying, and reduction of postprandial glucagon and food intake, without causing hypoglycemia.

TASTE PERCEPTION AT INTESTINES?

Taste receptors in the mouth, where food-perception occurs under meal intake, are well described but taste receptors are also present throughout the gastrointestinal (GI) tract playing important roles in nutrient uptake and regulation of appetite. Bitter taste receptors in particular have been described at GI, primarily related to detection of food-toxic compounds for their rejection. There are 25 different bitter taste receptors that comprise a complex scenario in comparison with sweet taste perception (only 1 receptor) for example. Some specific bitter food components have been implicated in GLP-1 release and satiety sensation, without indication of the molecular pathway nor physiological role of bitter perception in the intestines.

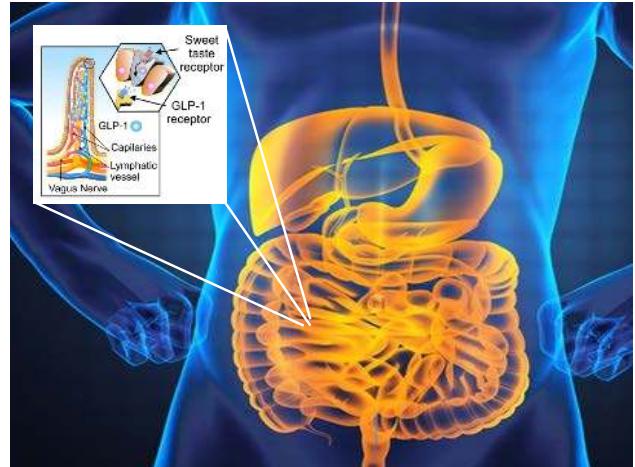
This study assesses the location of bitter taste receptors in the human gut and by which mechanism their activation leads to GLP-1 secretion by enteroendocrine cells distributed across the GI tract.

IN VITRO AND EX VIVO MODELS

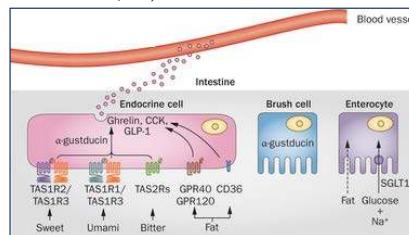
To find new insights in molecular mechanisms based on bitter receptor activation that leads to improved physiological malfunction involved in T2D symptomatology, the study aims the:

- ❖ Development of human *in vitro* models that unveil the relationship between food-bitter compounds and the stimulation of GLP-1 release
- ❖ Design of T2D-*in vitro* cellular models to study the contribution of bitter-stimulated GLP-1 release, employing human cell lines of GI tract
- ❖ Development of human mini-gut organoids (3D culture) as *ex-vivo* model to describe bitter-stimulated GLP-1 function in the control of T2D local symptomatology

The implication of bitter taste receptors present at the human gut in the production of satiety hormone GLP-1 would elucidate an alternative mechanism to better understand the relationship between gut-nutrient perception and key elements for glycaemia control, thus conferring new perspectives to prevent and manage Obesity and Diabetes diseases.



▲ Taste receptors at gastrointestinal tract: Schematic representing of the intestinal taste receptor activation by food-stimulus, and the consequent secretion of the hormone GLP-1 by enteroendocrine cells at the villi. (Modified from Mukesh et al., 2015)



< Gut integrated responses: The intestinal tissue is specialised for nutrient absorption, several types of cells participate in uptake and regulation. Endocrine cells respond to food after taste receptors activation. (Santa Cruz et al., 2015)

v Characteristic 3D organisation of gut organoids: Images show the morphology and complexity of mini-gut organoids (mice) with different microscope techniques. It's possible to notice the lumen compartment and by fluorescent labelling is possible to distinguish different cell types and molecules. Schematic representing of the intended *in vivo* model.(*)



PROJECT INFORMATION

Researcher: Francisca Paz Noya Leal
Supervisors: Dr. Jurriaan Mes, Dr. Renger Witkamp, Dr. Jocelyn Meijerink and Ir. Shanna Bastiaan-Net; FBR-WUR
Zone: Wageningen
Affiliation: AieCh WUR
E-mail: f.noyaletal@gmail.com francisca.noyaletal@wur.nl

RELATED PUBLICATIONS

- Abrol R et al. (2015) Structural basis for bitter taste receptor activation and its potential role in targeting diabetes. *Functional Foods in Health and Disease* 2015; 5(3): 117-125
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 - Santa Cruz S et al. (2015) The endocrinology of taste receptors. *Nat Rev Endocrinol* ISSN 1759-5037
- (*) Images of mice organoids are from doi:10.1242/dmm.014399 and doi:10.1038/srep16831

Monitoring and Maintenance of Railway Infrastructure

Big Data, Sensor Fusion, Proactive Maintenance

In the Section of Railway Engineering, I work towards practical and fundamental issues in the field of Structural Condition Monitoring and Maintenance of railways. This field includes monitoring, modelling, analysis and control of railway systems, with a focus on the whole system performance (the infrastructure and its dynamic interactions with trains, maintenance actions, infra-managers, railway companies, rail passengers, society and environment).

En la sección de Ingeniería Ferroviaria, trabajo en temas prácticos y teóricos en el campo de monitoreo estructural de la condición y mantenimiento de sistemas ferroviarios. Este campo incluye monitoreo, análisis y control de sistemas ferroviarios, con un enfoque en la infraestructura como un todo (interacción dinámica de la infraestructura con: trenes, planes de mantenimiento, objetivos del administrador de la infraestructura, prestadores de servicios ferroviarios, pasajeros, beneficios sociales y medio ambientales).

Topics of my interest

The main objective in my research is to develop new systematic and computationally efficient monitoring, modelling and decision support methods for railway systems, combining knowledge of the physical assets (track, power supply, stations, vehicles, communications, etc.) together with new advances in signal processing and control for railway data sources. The research field also includes a real-implementation component, considering the design of proper benchmarks, real-data acquisition, measurements in the railway tracks, and interaction with practitioners at the different authorities (NS, ProRail, and contractors), consultancy firms, and policy makers.

Regarding the fundamental component, I work on general aspects of health condition monitoring and maintenance decision support systems, with methodologies coming from the artificial intelligence field, machine learning, Big Data analytics, together with different non-centralized and centralized model predictive control structures. In summary, the following topics are of my interest:

Railway systems as a whole

- Intelligent health condition monitoring for railway infrastructures.
- Big data analytics and machine learning for railway signals and systems.
- Design of whole system key performance indicators and maintenance strategies for railway infrastructure.
- Maintenance strategies for railway assets: High speed, conventional and rural lines.
- Innovation and implementation during operation.

Maintenance strategies based on railway system models

- Misalignment between the objectives of contractors, ProRail and NS: Collaborative and non-collaborative game theory approaches, hierarchical and distributed model predictive control (HD-MPC) for maintenance decision coordinating different contract regions from a whole system perspective.
- Design of maintenance strategies for rail-track replacement, grinding, tamping: Hybrid model-based predictive control for railway systems including discrete and continuous variables, and different heuristics to solve expensive combinatorial problems.
- Including systematically the effect of different sources of stochasticity in the decision making: Robust model predictive control for maintenance in railways, worst case analysis, scenario based approaches, optimistic optimization.
- Dynamic support in decision processes in railway systems with multiple objectives: Multi-objective model based predictive control (MO-MPC) including punctuality, efficiency, robustness, cost reduction, safety, sustainability and energy consumption of the railway operations.

Application domains

- Conventional tracks, high speed lines, under-utilized rural/secondary low density lines, light train (metro), and freight dominated routes.
- Improving rail mobility experience of passengers, including an efficient integration with other modes in/near railway stations: share-a-car systems, door to door 100% electrical vehicles, bicycle access/parking facilities, and public transportation.
- High speed line/train re-design.



Alfredo Núñez



Measuring hardness, insulated rail joint, Ali Jamshidi, Zhen Yang and Alfredo Núñez.



CTO Train of the Section of Railway Engineering. Education & Innovation in a moving classroom.

PROJECT INFORMATION

Researcher: Dr. Alfredo Núñez Vicencio

Zone: Delft

Affiliation: Section of Railway Engineering, CITG, TU Delft

E-mail: a.a.nunezvicencio@tudelft.nl

Personal webpage (if applies): www.alfredonunez.net

RELATED PUBLICATIONS

- A. Jamshidi, A. Núñez, R. Dollevoet, and Z. Li, "Robust and predictive fuzzy key performance indicators for condition-based treatment of squats in railway infrastructures". *Journal of Infrastructure Systems*, 2017.
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Quantum Transport on single molecules

Measurement at the smallest scale of matter.



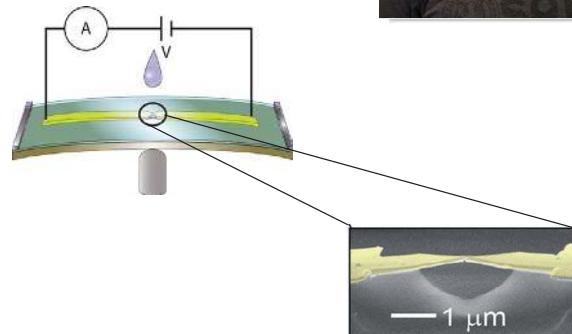
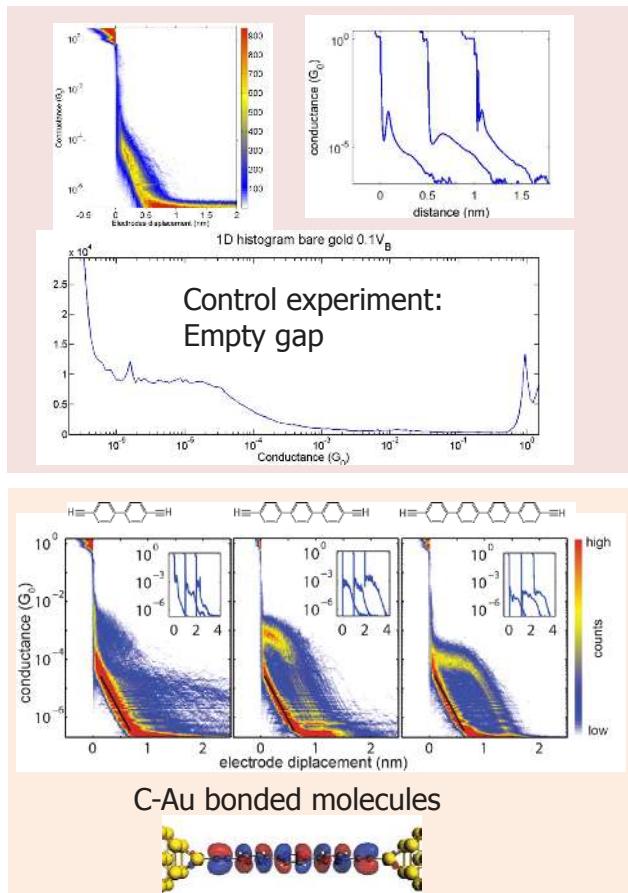
The goal of this project is to advance in the study of single molecule electronics. We use a technique called mechanically controlled break junctions (MCBJ) to measure the conductance of simple organic molecules. We try to shine light on the fundamental problem of charge transport through organic molecules attached to metallic electrodes. We focus on conductance measurements of different classes of molecules which are designed in close collaboration with chemist and theoreticians to tune the electronic performance

Nuestro trabajo se enfoca en el estudio de electrónica de moléculas individuales. Usando la técnica de nano-gaps controlados mecánicamente (MCBJ) medimos corriente eléctrica a través de moléculas orgánicas, una por una. Trabajamos con el objetivo de develar la naturaleza del transporte de carga en sistemas donde la mecánica cuántica juega un papel fundamental. El proyecto se realiza en intensa colaboración con científicos del área de la química y la física teórica, entre ellos también investigadores chilenos.

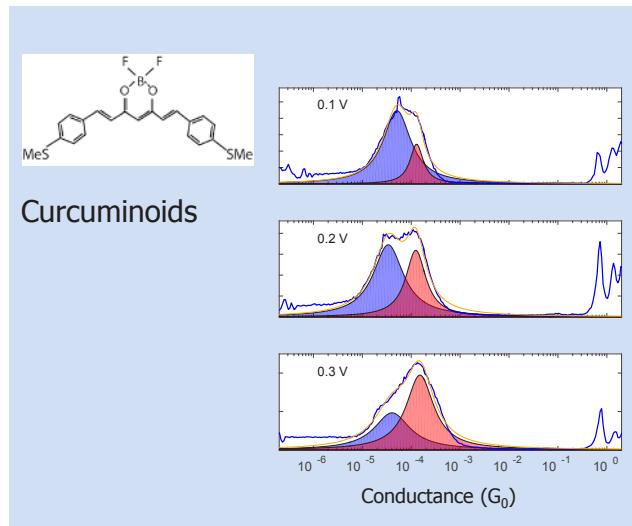


Thousands of measurements and big variability:

The electronic properties of molecules are highly dependent on the exact atomic configuration of the electrodes. To gain a good understanding of the system electrode-molecule-electrode we measured the molecular conductance thousands of times and perform statistical analysis to obtain the characteristic features the system.



- Atomically sharp electrodes formed by breaking nano-sized gold wire
- Very high electrode stability and control over their spacing ~ 5 pm
- Low Bias conductance measured as function of the electrode displacement
- Statistical analysis of thousands of junction configurations



PROJECT INFORMATION

Researcher: Ignacio Olavarria
Supervisor : Herre S.J. van der Zant
Affiliation: Kavli Institute of Nanoscience, TU Delft
E-mail: i.j.olavarriacontreras@tudelft.nl.com

RELATED PUBLICATIONS

- I. Olavarria-Contreras, et al., (2016) C-Au Covalently Bonded Molecular Junctions Using Nonprotected Alkynyl Anchoring Groups, *JACS*, 138 (27), pp 8465–8469.
- A. Etcheverry-Berrios, et al., Multiscale Approach to the Study of the Electronic Properties of Two Thiophene Curcuminoid Molecules, *Chem. Eur.J.* 2016, 22, 12808 –12818.

Blended Language Learning, CLIL, and STEM: affordances and constraints

The case of tertiary education in Chile

The present piece of research seeks to describe and explain the implications of the implementation of a pedagogical approach for adult learners and teachers of English as a Foreign Language (EFL) in engineering contexts. Specifically, this program has been conceived as a more sustainable and transferrable way to learn a foreign language with the use of Information and Communication Technologies (ICTs) and the application of teaching principles from three main sources: Blended Language Learning (BLL), Content and Language Integrated Learning (CLIL), and Science, Technology, Engineering and Mathematics (STEM).

El presente estudio busca describir y explicar las implicancias de la implementación de un programa didáctico para la enseñanza-aprendizaje del inglés como lengua extranjera en un contexto de educación superior chileno ingenieril, tanto para los aprendientes de la lengua meta como para sus docentes. Para el logro de estos objetivos, el diseño teórico-práctico incorpora algunos principios de Hybrid Language Learning (HLL) y Content and Language Integrated Learning (CLIL), y Science, Technology, Engineering and Mathematics (STEM).



About the study

Chile is a leading Latin-American country in technological development (OECD, 2014) and sees ICT tools in education as a source of opportunities for greater efficiency in schooling. Although policies have been developed to promote ICTs use in educational settings, all these efforts do not translate into more blended language environments due to an ongoing reluctance to teach with the incorporation of technological tools. The reasons are not clearly stated yet; there are suppositions and subjective ideas on this matter, but nothing conclusive that we know of yet.

The goal of this piece of research is to contribute to the characterization of this veiled issue and to propose a way to effectively incorporate ICTs in the modern Chilean foreign language classrooms.

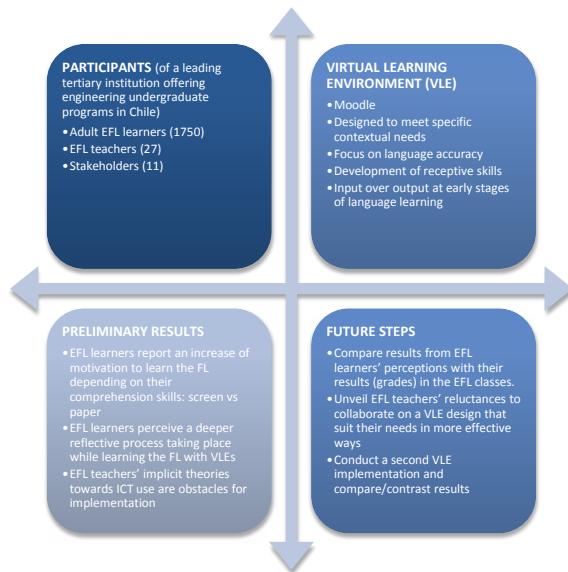
General objective:

To evaluate the effectiveness of the implementation of a cooperative virtual learning environment (VLE) in EFL environments. This evaluation considers two dimensions:

- ✓ VLE integration as a means to build linguistic knowledge and to increase motivation towards learning from students.
- ✓ VLE as a means to promote teacher's awareness and reflection of their own teaching performance.

Expected outcomes:

- 1.A thorough description of the factors and the variables that intervene in the use of ICT tools in Chilean classrooms at tertiary levels of instruction in engineering contexts.
- 2.A preliminary model for blended language learning of EFL that can be sustainable and transferable in other educational contexts of similar characteristics.



Postdoctoral research funded by CONICYT- BECAS CHILE

Head researcher: Marianna Oyanedel
Research Assistant: Sebastián Olivares

UTRECHT-CHILE
Faculty of Social and Behavioral Sciences, Utrecht University
Departamento de Estudios Humanísticos, Universidad Técnica Federico Santa María

m.g.oyanedelgonzalez@uu.nl
marianna.oyanedel@usm.cl

Diamond magnetometry for imaging stress responses

Mapping Reactive Oxygen Species in the living cell



The Nitrogen-Vacancy centre is a point defect inserted in the diamond lattice which shows special magneto-optical properties. These properties enable us to detect and analyse, at nanometric scale, the magnetic noise produced by molecules on its near environment. We will use this information to monitoring the balance of Reactive Oxygen Species in cells, and from there to study the cell response to different stress agents.

El centro de Nitrógeno-Vacancia es un defecto en la red cristalina de los diamantes que presenta particulares propiedades magneto-ópticas. Estas propiedades permiten la detección y el análisis, a escala nanométrica, del ruido magnético producido por las moléculas que se encuentran en su entorno cercano. Nuestro objetivo es usar esta información para observar el balance de Especies Reactivas de Oxígeno en las células y desde ahí estudiar la respuesta celular a diferentes agentes promotores de stress.



MOTIVATION

The excessive accumulation of **ROS** in the cell is related with **damages** on critical cell's components, such as DNA and proteins,^[1] and it has being identified as a promoter in the pathogenesis of severe **illnesses**, such as cancer, diabetes mellitus and neurodegenerative diseases. In addition, ROS are also involved in the cell's **ageing** process. The **high reactivity** of the ROS makes difficult their study in real conditions, mainly because of their short lifespan. Under this circumstances, the use of **Diamond Magnetometry** is presented as a promising alternative to the current methods of detection and analysis of ROS. Using this technique, we expect to be able to detect ROS at **high spatial resolution**, in **real time** and at **physiological conditions**, but also to collect **spectral information** from this molecules. In this project, we are developing the **techniques** and **instruments** needed to make possible the detection and analysis of ROS inside living cells.

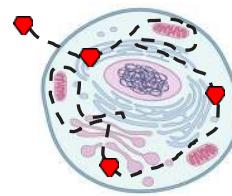
BASIC PRINCIPLE

Diamond Magnetometry uses as a sensor a diamond crystal which contains a colour centre produced by the substitution of two adjacent carbon atoms with one nitrogen atom and a vacancy, this defect is called **NV-centre** (fig. a). When the NV-centre is excited (450–650 nm) it emits a **photoluminescent** signal (600–800 nm) which can be **modulated** by the action of a **magnetic field** (fig. c). The energy diagram of the NV-centre shows a spin triplet at ground state with zero field splitting of 2.87 [GHz] between the sublevels $m_s=0$ and $m_s=\pm 1$. When an external magnetic field is applied, the sublevels $m_s=\pm 1$ split apart, by means of the **Zeeman effect**, setting two different resonance frequencies (fig. b). In consequence, the strength of the magnetic field at the NV-centre position can be derived by measuring the gap between these two resonance frequencies.

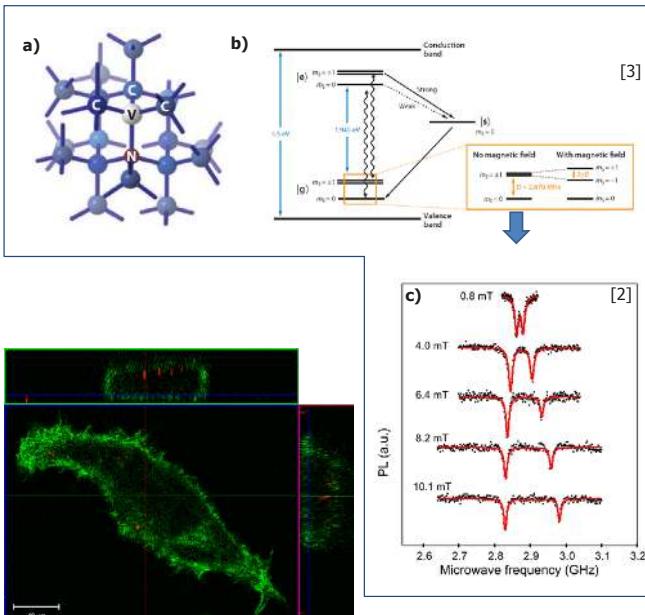
CURRENT WORKS AND NEXT STEPS

At this point, the project has build two instruments which are able to perform Electron Spin Resonance (**ESR**) measurements in living cells. Also, the experiments have shown that the nanodiamonds are basically **non-toxic** for cells. Moreover, the **particle internalisation** problem has been treated with different approaches, obtaining favourable results when the nanodiamonds are coated with a special recombinant protein (fig. d).

Nowadays, we are in process of upgrading the instrumentation with the objective of performing more sensitive measures (**T1 relaxometry**). On the other hand, we are investigating how to target the nanoparticles at specific places inside the cell.



The idea: Nanodiamonds containing NV-centres are internalised by the cell. The magnetic noise is measured at different locations by means of Optically Detected Magnetic Resonance. The presence, amount and type of ROS are derived.



d) HeLa cell showing nanodiamonds inside (HD=120nm). The particles were coated with the polymer-protein C₄-K₁₂.

PROJECT INFORMATION

Researcher : Felipe Perona Martínez
 Supervisor : Romana Schirhagl
 Zone : Groningen
 Affiliation : University Medical Center Groningen / University of Groningen
 E-mail : felipeperona@gmail.com

RELATED PUBLICATIONS

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COOLFAÇADE

Architectural integration of solar cooling systems in the building envelope

The necessity of lowering energy consumption from fossil fuels in the built environment demands us to take action on optimizing building systems currently under operation, while developing new technologies driven by renewable energy sources. This research project examines the feasibility of solar cooling façade integration for commercial buildings in warm climates as a response for the current scenario, while exploring further possibilities for the development of new architectural façade products.

La necesidad de reducir el consumo de combustibles fósiles en nuestras ciudades implica optimizar los sistemas actualmente en operación en edificios, mientras se exploran nuevas tecnologías basadas en energías renovables. Este proyecto busca examinar las posibilidades y barreras existentes para la integración de sistemas de refrigeración solar en fachadas para climas cálidos, como alternativa a los sistemas convencionales de aire acondicionado, además de ofrecer nuevas posibilidades para el desarrollo de productos arquitectónicos y diseño de fachadas.



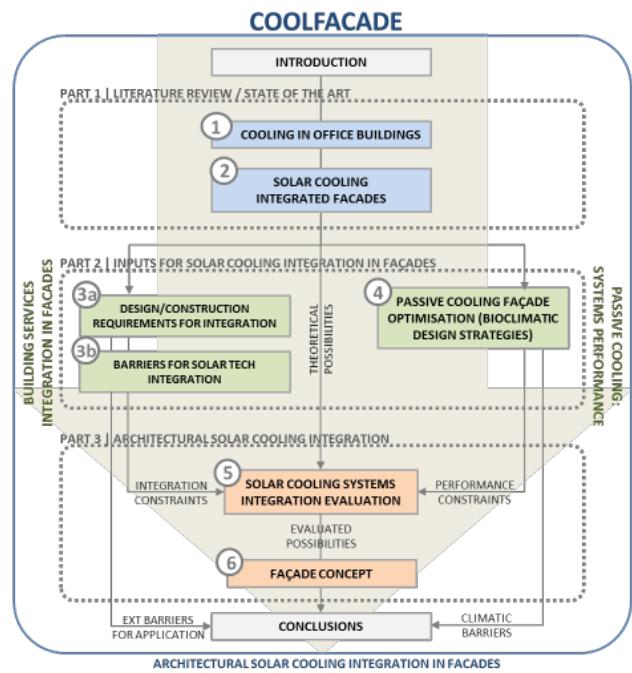
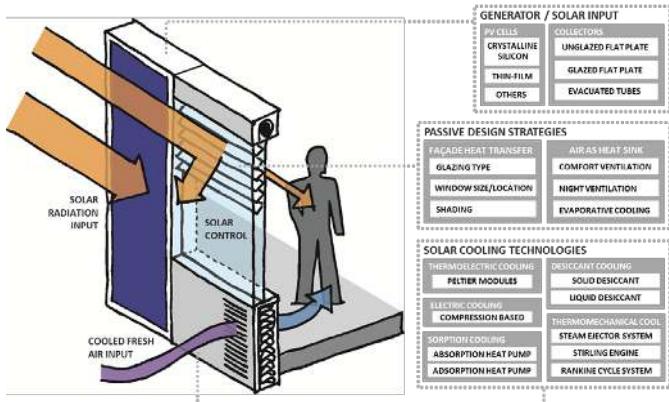
RESEARCH DESCRIPTION

The energy utilised for the cooling of buildings is an important aspect of the current public agenda towards sustainability. Buildings account for almost a third of the global energy consumption, while studies show that refrigeration and air conditioning are responsible for about 15% of the total electricity consumption in the world. Solar cooling systems have been focus of attention these last years, for its potential to lower indoor temperatures using solar renewable energy. However, there is no much development regarding its architectural integration in buildings.

The research project deals with the integration of solar driven cooling strategies into the building façade, as a way to support the use of low-energy alternatives to the use of centralized AC in office buildings. Furthermore, the possibility of using the façade itself as a heat dissipation system is seen as an opportunity for the development of self-sustaining cooling façade modules to be applied either on new buildings or refurbishment projects, avoiding mechanical cooling equipment whatsoever in the line of new "nearly zero" energy standards.

The research project is structured in three parts: a first part for the definition of the framework and fundamental aspects; a second one for the exploration of different families of topics to be considered as design inputs; and finally a third part dealing with the evaluation of the integration potential of selected solar cooling technologies and the design of a façade concept to discuss current integration possibilities through feasible scenarios.

There are two main expected outcomes from the research project: a conceptual design and evaluation of a solar cooling façade concept for warm climates, and a roadmap for solar cooling façade product development considering current possibilities and constraints and future scenarios.



PROJECT INFORMATION

Researcher: Alejandro Prieto Hoces

Supervisor: Prof. Dr. Ulrich Knaack / Prof. Thomas Auer

Zone: Delft

Affiliation: Delft University of Technology, Faculty of Architecture and the Built Environment, Department of Arch. Engineering + Technology, Façade Research Group

E-mail: A.I.PrietoHoces@tudelft.nl / aleph86@gmail.com

RELATED PUBLICATIONS

- Prieto, A., Knaack, U., Auer, T., Klein, T., "COOLFAÇADE - Design driven categorisation of solar cooling technologies for facade integration possibilities" In: Proceedings of 15th International Conference on Sustainable Energy Technologies (SET 2016) July 19th- 22th 2016, Singapore.
- Prieto A, Knaack U, Auer T, Klein T. Solar façades – Main barriers for widespread façade integration of solar technologies. *Journal of Facade Design and Engineering*. 2017;5(1):51-62.
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Media use by Chilean youth during the PSU

Challenges and opportunities

Summary of the project/research topic

In the U.S., the SATs (Scholastic Aptitude Test) can be a source of anxiety and stress, resulting in maladaptive signs and symptoms in school pupils (Connor, 2003). The present qualitative study analyzed the uses & gratifications and sharing of emotions of Chilean youngsters while participating in the Prueba de Selección Universitaria (PSU), the Chilean equivalent to the SATs. A set of 44 interviews along the country analyzed the youngsters' social sharing patterns, that is to say, with whom they most frequently shared their emotions while taking the PSU, both online and face to face, both before taking the test and after knowing the results.

Research findings indicated that the youngsters' close circle (nuclear family, partner or close friends) act as main confidants during the entire PSU process. The main gratifications of the Facebook PSU group were academic preparation, and releasing stress through humor. As to different media uses, Whatsapp emerged as the most commonly used social media during the process.



CHALLENGES AND OPPORTUNITIES

Challenges

- Sharing sometimes 'not done'.** Many youngsters considered that the experiences regarding successes and failures in the PSU are best kept out of Facebook.
 - "People sometimes make things public that they shouldn't make public" (M.I., 18 yrs)
- Triviality of content.** Students sometimes expressed concern that some of the content in the group was trivial and lacked importance.

Opportunities - Uses & Gratifications Facebook Group

- 'Academic support'.** A large number of participants declared to use the site to advance their study skills by sharing study material with other members, and to help one another with test questions.
- Stress release through humor.** Participants stressed that the numerous jokes and memes regarding the test helped alleviate their study pressure.

Opportunities - Uses & Gratifications Whatsapp Groups

- Most popular app.** Whatsapp emerged as a frequently used social media tool with a rather different connotation during the PSU.
- Informative,** Used mainly for "factual information", i.e. exchanging data about test taking procedure.
- In-group dominance.** Predominantly used for in peer-group network communication.
- Close counterparts.** Preferred for immediate communication with close members (parents, partners).

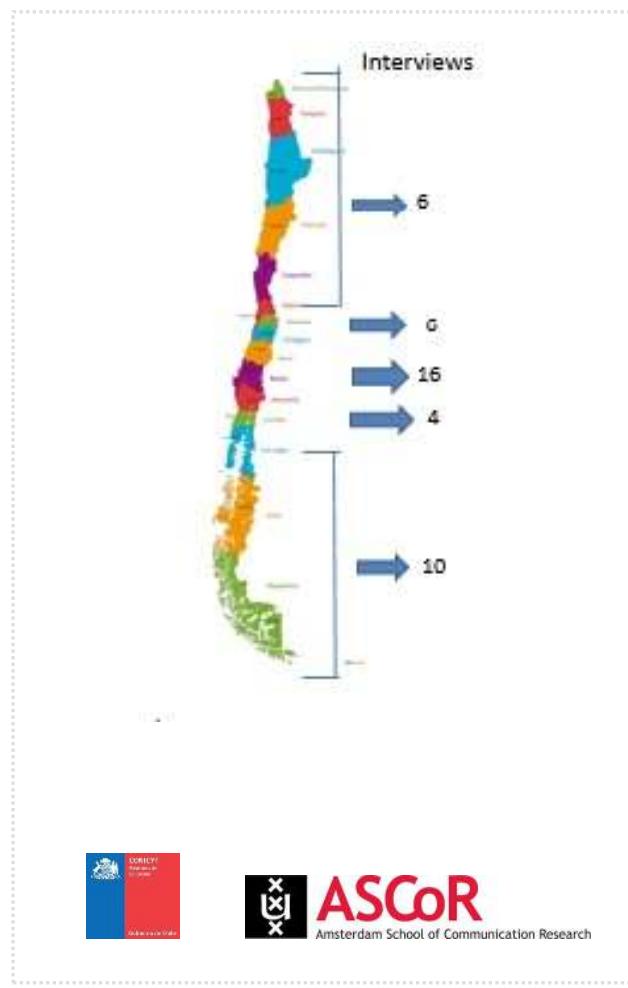
Procedure

Interviews were semi-structured with the following topics: main experiences during the PSU, main confidants, main expectations of results, career choice, sharing online about the PSU, helping others online with the PSU, participating in Facebook groups, use of other social media regarding the PSU.

Conclusion

While youngsters still use face to face confidants for social support during the PSU, both the Facebook group and Whatsapp were regular source of mainly academic support through the period, resulting in the alleviation of preparation costs for many students.

Additionally, Facebook group showed worthwhile as an element of distraction and stress release during the pre and post PSU testing period.



PROJECT INFORMATION

Researchers: Carmina Rodríguez Hidalgo, MSc. Amaranta Alfaro Muirhead MA
Supervisors: Prof. Dr. E. Tan, Prof. Dr. P. Verlegh
Zone: Amsterdam
Affiliation: University of Amsterdam, University of Hamburg
E-mail: C.T.RodriguezHidalgo@uva.nl
Personal webpage: <http://www.uva.nl/en/about-the-uva/organisation/staff-members/content/r/o/c.t.rodriguezhidalgo/c.t.rodriguez-hidalgo.html>

RELATED PUBLICATIONS

- Rodríguez Hidalgo, C. T., Tan, E. S. H., & Verlegh, P. W. J. (2015). *The social sharing of emotion (SSE) in online social networks: a case study in Live Journal. Computers in Human Behavior*, 52, 364-372. DOI: [10.1016/j.chb.2015.05.009](https://doi.org/10.1016/j.chb.2015.05.009)
- Rodríguez Hidalgo, C. T., Tan, E. S. H., & Verlegh, P. W. J. (2015). *The social sharing of emotion in SNs: A case study in live journal blogposts*. Abstract from Paper presented at the Etnaal van de Communicatiewetenschap, Antwerp, Belgium,

Studying hormonal regulation of stem cells in fish testis

Implications for aquaculture of salmon

The balance between self-renewal and differentiation of spermatogonial stem cells (SSCs) is important for long-term fertility; however, information on the regulation of this balance is incomplete. In our group, we study how the endocrine system modulates the SSCs fate in zebrafish testis. Since genetic impact of escaped farmed salmon on wild populations and early sexual maturation are major problems in salmon industry in Norway, understanding fish reproduction will help to improve salmon farming.

El balance entre la auto-renovación y diferenciación de las células madres espermatogoniales (CMEs) es importante para la fertilidad a largo plazo; sin embargo, la información sobre este tema es todavía incompleta. En nuestro laboratorio estudiamos como el sistema endocrino modula el destino de las CMEs en testículos del pez cebra. Debido a que en Noruega el escape de salmones y la madurez sexual temprana son dos grandes problemas para la industria, el entendimiento de la reproducción de peces ayudará a mejorar la acuicultura del salmón.



Background

Salmon farming is a key-industry in Norway, with first hand value above three billion euros per year, and more than twenty thousand people employed directly and indirectly. However, genetic impact of escaped farmed salmon on wild populations is regarded as a major environmental problem, currently preventing further expansion of the Norwegian salmon industry. In addition, early sexual maturation decreases growth rate, affecting fish production. Therefore, strong effort in controlling these issues have been done by the Norwegian government and companies. Understanding the basis of fish reproduction provides an opportunity to develop mechanisms of control of these problems.

In animals, sexual reproduction is by far the dominating mode of reproduction, although only half of the individuals (i.e. mothers) can produce offspring. The balance of this costly strategy is provided by the evolutionary advantage of the genetic recombination during meiosis in combination with sexual selection that exerts its pressure predominantly on males. Males produce thousands of haploid spermatozoa, highly specialized cells functioning as motile genome vectors, in a event denominated spermatogenesis. Spermatogenesis is a cellular developmental process that requires complex regulatory mechanisms. The cellular basis of spermatogenesis is a population of spermatogonial stem cells (SSCs), usually present as single cells in close contact with somatic cells. SSCs can either be quiescent, self-renew to produce more SSCs, or differentiate into subsequent developmental stages to eventually produce spermatozoa. In order to sustain spermatogenesis, a balance between self-renewal and differentiation is required.

In vertebrates, the endocrine system has evolved as master control system of spermatogenesis. The pituitary Follicle-stimulating hormone (FSH) regulates the activity of Sertoli cells, which then communicate with germ cells via short-range signalling. Different from mammals, zebrafish FSH promoted spermatogenesis in an androgen-independent manner by promoting or suppressing several growth factors.

PhD project

I am studying the signaling system of the growth factor insulin-like growth factor (Igf) 3 in zebrafish testis and, specifically investigates, how the Igf3 signals and how the Igf binding proteins modulate its biological activity in zebrafish testis. Understanding this system will provide important knowledge on spermatogenesis regulation in fish and how to modulate it in order to improve fish production.

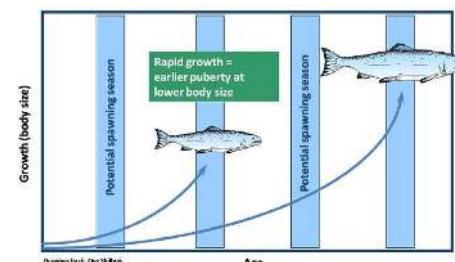


Figure 1. Effect of early sexual maturation on salmon growth rate

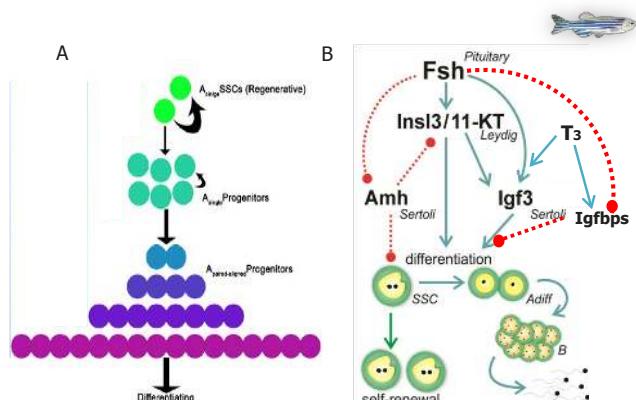


Figure 2. (A) The balance between self-renewal and differentiation of spermatogonial stem cells and (B) endocrine regulation of zebrafish spermatogenesis.

PROJECT INFORMATION

Researcher: Diego Safian
Supervisor: RW Schulz
Zone: Utrecht
Affiliation: Reproductive Biology Group, Department of Biology, Utrecht University
E-mail: d.a.safiancarrillo@uu.nl
Personal webpage: <https://www.uu.nl/staff/DASafianCarrillo/0>

RELATED PUBLICATIONS

- Safian D, Morais RD, Bogerd J and Schulz RW, 2016. Igf binding proteins protects undifferentiated spermatogonia in the zebrafish testis against excessive differentiation. *Endocrinology*, 157(11): 4423-4433.
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Bodily experiences in Santiago and Amsterdam

An ethnographic study of practices, meanings and corporality in Fitness gyms



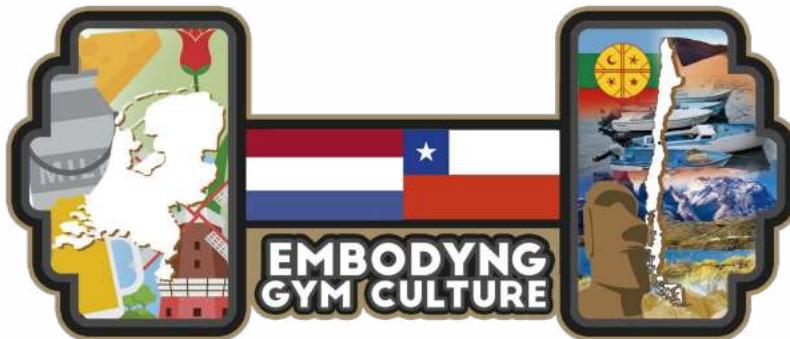
Concepts like health, sport, beauty, do not mean the same everywhere. On the basis of my previous research in Santiago, I will compare gym culture in two major cities in two different regions of the world: Santiago de Chile and Amsterdam, The Netherlands. My aim is to compare the varied forms in which fitness is embedded in local urban culture by looking at practices, meanings and experiences from people who work out. The interesting and often hidden relationship between culture, body and society, is the motivation for this research.

By focusing on people who attend gyms and fitness clubs, I hope to increase our understanding of the different contextual practices of attendance to the gym and the cultural implications of these differences. The dissertation will use a qualitative, ethnographic approach in which the practices, meanings, experiences and imageries of gym users in different fitness clubs will be studied and compared.



Conceptos como salud, deporte, belleza, no significan lo mismo en todas partes. Basándome en una investigación anterior en Santiago, mi actual investigación compara la cultura del gimnasio en dos diferentes capitales del mundo: Santiago de Chile y Ámsterdam, Holanda. Mi objetivo es comparar las formas variadas en que el fenómeno del Fitness se inserta en la cultura urbana local, esto a través del análisis de las prácticas, significados y experiencias de las personas que entran en gimnasios. La interesante y a menudo oculta relación entre cultura, cuerpo y sociedad es la motivación de esta investigación.

Al concentrarme en las personas que asisten a gimnasios y clubes de fitness, espero ampliar nuestra comprensión de las diferentes prácticas contextuales de esta asistencia y las implicaciones culturales de las diferencias que puedan existir. La investigación utilizará un enfoque cualitativo y etnográfico en el que se estudiarán y compararán las prácticas, significados, experiencias e imágenes de los usuarios de gimnasios en diferentes clubes de fitness.



PROJECT INFORMATION

Researcher: Alexis Sossa

Supervisor (if applies): Prof. dr. Michiel Baud, Director of CEDLA

Zone: Amsterdam

Affiliation: Centre for Latin American Research and Documentation (CEDLA)

E-mail: alexis.sossa@gmail.com

RELATED PUBLICATIONS

2016 - *I'm super-setting my life! An ethnographic comparative analysis of the growth of the gym market*, Sport Science Review, vol. XXV, no. 5-6, 2016, 321 – 344.

2015 - *Studying corporality in the gym: Practical reflections for the social sciences*. Methaodos.revista de ciencias sociales, 3 (2): 192-206

2015 – "Entrenar hasta que duela. Significaciones culturales asociadas al dolor y el cansancio en la ejercitación en gimnasios". Desacatos. N° 48, pp: 140-155.

Management of Affordable Condominiums

The intermediary role of social enterprises in condominium improvement for Chilean low-income homeowners.



This research project is focused on the intermediary role of social enterprises in providing support, skills and building capacity among communities to improve management processes and to address quality in the built environment. The main goal is to show the possibilities and constraints of the intermediary role of social enterprises in condominium management models for Chilean low-income homeowners.

Este proyecto de investigación se enfoca en el rol del tercer sector, y especialmente las empresas sociales, en la gestión habitacional, a través del apoyo social, técnico y organizacional a las comunidades para mejorar la mantención y administración de sus viviendas. El principal objetivo es mostrar las posibilidades y limitaciones de modelos alternativos para la gestión de condominios sociales.



RESEARCH QUESTION

What is the current and potential role of intermediary organisations (social enterprises) to support Chilean homeowners to improve and to maintain affordable condominiums?

RESEARCH DESIGN AND METHODS

The research design considers three main sections:

1. Definition of the problem regarding condominium management, low-income homeownership and the role of social enterprises in housing management.

[literature review, field observation and semi-structured interviews, focus group]

2. International case study analysis of social enterprises' good practises in housing management.

[literature review, semi-structured interviews, field observation]

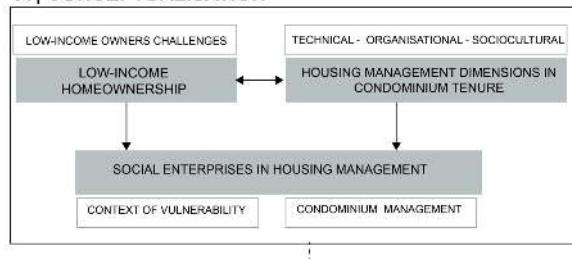
3. Definition of possibilities and constraints of the role of social enterprises in the management of Chilean affordable condominiums.

[definition of scenarios, design of guidelines, interviews to validate]



RESEARCH DESIGN

A | CONCEPTUALISATION

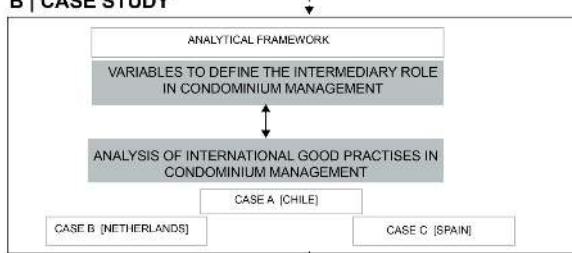


DELIVERABLES

Definition of problem variables of condominium management in Chile according to technical, organisational an sociocultural dimensions



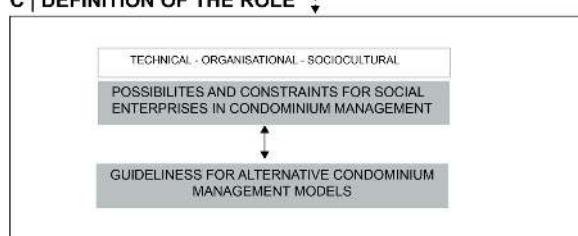
B | CASE STUDY



Database of international good practises in housing management and in-depth analysis of three selected cases



C | DEFINITION OF THE ROLE



Definition of possibilities and identification of the constraints for the intermediary role of social enterprises in housing management in Chile

Design of guidelines for alternative condominium management models

PROJECT INFORMATION

Researcher: Luz María Vergara d'Alençon
Supervisor (if applies): Prof. Vincent Gruis
Zone: Delft

Affiliation: Delft University of Technology
E-mail: L.M.VergaraDalencon@tudelft.nl
website : linkedin.com/in/luzmariavergara

|

RELATED PUBLICATIONS

- Vergara d'Alencon, L. M., Gruis, V., & Van der Flier, K. (2016). The intermediary role of social enterprises in the management of affordable condominiums. Evidence from a Chilean case study. ENHR Conference 2016. Belfast, Northern Ireland, 28 June - 1 July 2016.
- Vergara d'Alencon, L. M. (2016). Gestión de la Vivienda Social. Hechos, desafíos y campos de acción. Revista CA. Ciudad y Arquitectura, 152.



Redes Chilenas

Trabajando en unidad para un mejor futuro científico en Chile

RECH is the Chilean Networks Association. RECH is comprised of 14 networks of Chilean researchers throughout the world. At RECH, we intend to promote changes to the Chilean scientific institution by working towards strengthening the investment in science, supporting the generation of the Ministry of Science and Technology and improving the conditions of Becas Chile for scholarship recipients, among other goals. We hope to get to the non scientific Chilean population by communicating what we do and how to achieve our goals.

RECH es una plataforma que agrupa distintas redes de investigadores Chilenos a lo largo del mundo y busca promover cambios en Chile en pos de mejorar la institucionalidad científica Chilena. Actualmente participan 14 redes y estamos en contacto con diversas instituciones para mejorar la conectividad de la comunidad científica tanto en Chile como en el exterior con la sociedad Chilena. Estamos en trabajo constante para mejorar las condiciones de los becarios CONICYT así como aumentar la inversión en ciencia y tecnología entre otros proyectos.



QUIÉNES SOMOS RECH?

ReCh es una plataforma que aúna 14 redes de investigadores tanto en Chile como en el mundo y está compuesta por más de 2000 investigadores desempeñándose en diversas áreas del conocimiento. Provenimos desde las humanidades, ciencias sociales, ciencias básicas y aplicadas.

ReCh nace frente a la necesidad de articular una voz y una visión común frente al desarrollo de la actividad científica presente y futura del país. Para ello, se estableció una organización de trabajo (figura 1) que respeta la autonomía de las asociaciones miembros pero que evita burocracia innecesaria para así lograr consenso y buen criterio en la toma de decisiones. En la práctica, se busca generar un mecanismo de coordinación y decisión eficiente y efectivo, que permita la discusión abierta y respetuosa entre todas las asociaciones miembros de ReCh.

Tenemos la voluntad de promover los cambios que la institucionalidad científica chilena necesita, desde la creación del Ministerio de Ciencia y Tecnología, el incremento de los recursos basales para Investigación, hasta la mejora de las condiciones contractuales y becas. También esperamos contar con el apoyo de la comunidad no científica haciendo difusión de nuestro trabajo como RECH y como investigadores.

LAS REDES PARTICIPANTES

Las redes participantes de RECH son las siguientes y se puede observar los logos de cada una de ellas en la figura 2.

1. ANIP
2. Más Ciencia para Chile
3. Nexus Chile-USA
4. Red de Investigadores/as Chilenos/as en España (Red INCHE)
5. ICES (Investigadores Chilenos en Suiza)
6. CHISA@UNSW Australia
7. Asociación de Investigadores y Estudiantes Chilenos en Wageningen (AIECh)
8. CREGA-Melbourne
9. REDICEC (Red de investigadores Chilenos en Canadá)
10. UoMCs, Universidad de Manchester
11. ChileUCDavis
12. Red de Investigadores Chilenos en los Países Bajos (InNL)
13. UO Chile Australia
14. Chileberk (UC Berkeley)

COMISIONES DE TRABAJO

1. Comunicaciones
2. Becas
3. Inserción de investigadores
4. Mecanismos de retribución Becas Chile
5. Inversión en investigación en Chile
6. Ministerio de Ciencia y Tecnología

Si quieres trabajar con nosotros por favor no dudes en contáctarnos a contacto@redeschilenas.cl.

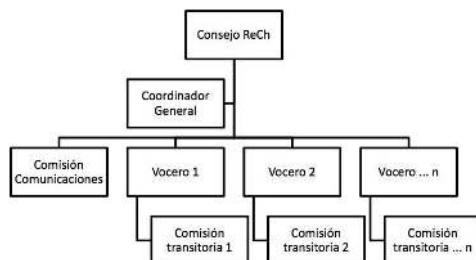


Figura 1: Estructura organizacional de trabajo en RECH



Figura 2: Logos de redes participantes en RECH



Figura 3: Mapa de la cobertura de RECH en el mundo

PROJECT INFORMATION

Researcher: Natalia Smith Cortinez
Zone: Groningen
E-mail: natalia.fsc@gmail.com, contacto@redeschilenas.cl

Si te gustaría tener mas información o sumarte al trabajo de RECH, contáctanos en nuestras redes sociales o a nuestro mail contacto@redeschilenas.cl.

Asociación de Investigadores y Estudiantes Chilenos (AIECh)

Chilean Student Association in Wageningen University



WAGENINGEN
UNIVERSITY & RESEARCH

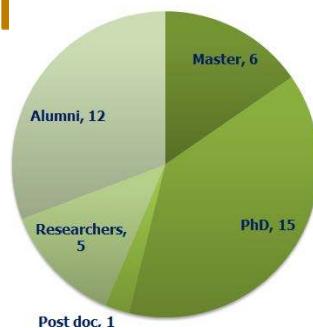


MOTIVACIÓN: necesidad de contar con una asociación establecida, que represente los intereses de los investigadores y estudiantes chilenos/relacionados con Chile en Wageningen University & Research.

OBJETIVOS: a) promover y facilitar la interacción e integración social, b) difundir las investigaciones y c) desarrollar una red de cooperación e intercambio científico.

MOTIVATION: the need to rely on an established association in order to represent the interests of Chilean researchers and students, and any other actor related with Chile and Wageningen University & Research.

OBJECTIVES: a) to promote and facilitate the social interaction and integration, b) to disseminate the research outcomes and c) to develop a collaborative network for scientific exchange.



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E-mail: chile.aiech@wur.nl
 Webpage: <https://www.facebook.com/AIEChWUR>



Red de investigadores
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