Alumni talk @ IST Austria

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Max Planck Research Group
Dynamics of Social Behavior

MPI for Evolutionary Biology
Plön, Germany
Some background on my own career path

2008
PhD in Mathematics
University of Vienna

2011
Post-Doc
MPI Plön

2013
Schrödinger Scholarship
(Austrian Science Fund)
Harvard University

2015
IST Fellow
IST Austria
Chatterjee Group

2019
Max Planck
Research Group Leader
MPI Plön

Plan for this talk

(1) Some background on my research
(2) My experience with the ERC Starting Grant
   (and other grants I did not get)
(3) Career opportunities in the Max Planck Society
Background #1: The agenda of my research group

- **Started** in October 2019
- **Research interest:**
  - **Evolutionary Game Theory**
    How can one describe mathematically how traits or (strategic) behaviours spread in a population?
  - **Modeling Social Behavior**
    Under which conditions do individuals cooperate?

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**Evolutionary modeling**

**Mathematical analysis**

**Simulations**

**Lab experiments**

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**Theorem 1:**
Suppose player 1 uses the memory-one strategy

\[
\begin{align*}
&pc0 = 1 - \phi(1 - s)(b - c - l) \\
&pc1 = 1 - \phi(1 - s)(c - e - l) + b + c \\
&pd0 = \phi(1 - s)(l - b) + b + c \\
&pd1 = \phi(1 - s)
\end{align*}
\]

for some constants \( s, l, \phi \) with \( \phi \neq 0 \). Then, no matter what player 2 does, payoffs satisfy \( \pi_2 = s \pi_1 + (1 - s)l \).
Background #2: Evolution of cooperation

• Basic question: Why do individuals cooperate? That is, why would we pay a cost to the benefit of someone else?

• Examples:
  - People donate to charities
  - Scientists review other scientists’ manuscripts
  - People organize (virtual) alumni talks
  - Numerous examples in the animal kingdom

• Some naive explanations:
  - Emotions: We help because we feel good about it.
  - Social norms: We follow tacit rules.
  - Institutions: Some acts of cooperation are enforced by law.
Background #3: Evolution of reciprocal cooperation

- **One (ultimate) explanation:** We cooperate because of reciprocity.

- **Direct reciprocity:**
  I help you today, because this increases the chance you help me tomorrow.

  **Research questions in this area:**
  - Under which conditions does direct reciprocity evolve?
  - Which strategies do individuals use?
  - What is the role of memory?

- **Indirect reciprocity:**
  I help you today, because this increases the chance someone helps me tomorrow.

  **Research questions in this area:**
  - Which kind of social norms allow for indirect reciprocity?
  - What is the role of collective memory?
• Most existing models either consider direct or indirect reciprocity

• However, interesting questions arise when both are present simultaneously

• Most existing models assume all individuals are symmetric

• How do people cooperate in the presence of inequality?

Laura Schmid et al  
(Work in progress)

Benyamin Delshad, Maria Kleshnina et al  
(Work in progress)
ERC Starting Grant #1: General overview

- **Target group:** Early career researchers who are ready to work independently
- Promising track record
- Convincing proposal
- Between 2-7 years after graduation
- Up to € 1.5 Mio for a period of 5 years.
- Any field of research. Three major categories:
  - Life Sciences
  - Physical sciences and engineering
  - Social Sciences and Humanities
  Exact rules differ between categories.

- Success rate (2019): 13.1%
- As an applicant, it (used to) involve two steps:
  - Submission of a proposal
  - Interview in Brussels
You need to choose a **host institution** within the European Union or associated countries (can be changed later)

You need to identify your scientific target group by choosing a **panel** responsible for you (in my case: LS8 Ecology, evolution, and environmental biology)

You need to prepare **two kinds of proposals**
- B1: Short proposal (max. 9 pages)
- B2: Detailed proposal (max. 15 pages)

**B1 Short proposal**
- Extended synopsis of proposal (5 pages)
- CV (2 pages)
- Early achievements track record (2 pages)

**B2 Detailed proposal**
(a) State of the art and objectives
(b) Methodology
(c) Budget

**Procedure**
- Application deadline usually mid October
- 3-4 Panel members read B1 proposal
- If successful, B1+B2 are sent to 4-10 reviewers
- Final interview (usually June/July)
ERC Starting Grant #3: Interview

- If your application is sent out for review, you are invited to a final interview in front of all (10-20) panel members.

- You can learn the name of the panel chair in advance, but you don't know the other panel members. Also, you do not know the review reports.

- General structure
  1. Scientific presentation (10 minutes)
  2. Q&A (15 minutes)

  Times are strict.

- Scientific presentation
  Why is this the right project to do? Why is this the right time to do it? Why are you exactly the person to do that project?

- Q&A:
  (-) In principle, all kinds of questions are possible
  (-) Most questions will be asked by the 3-4 panel members who actually read your proposal
  (-) These panel members are generally on your side. Still they are likely to ask tricky questions (e.g., those that were raised by the reviewers).
  (-) Your aim is to answer as many questions as possible (brief answers!)
ERC Starting Grant #4: Some personal recommendations

- Make use of the available resources:
  (-) IST Grant Office  
  (-) FFG (e.g., interview practice session)  
  (-) Feedback from supervisor, colleagues

- Proposal:
  (-) The B1 needs to contain all essential material
  (-) Structure your project into different “work packages”
  (-) Stress “High risk, high gain” (your project might be a complete game changer)
  (-) Don’t be too humble when you describe yourself or your achievements
  (-) Make sure that no questions remain open after reading your B2.
  (-) If possible, use proposal for several grants

- Interview
  (-) Practice your presentation many times (e.g., at FFG, your home research group, etc)
  (-) The panel members will have nasty questions. Be prepared.
Max Planck Society: General Overview

- Focuses on basic research
- There are currently 86 independent research institutes, spread all over Germany (plus some abroad). Each institute has its own scientific focus. Headquarter is in Munich.
- Each institute consists of several independent departments (led by directors). In addition, most of them have independent Max Planck Research groups (led by group leaders).
- Difference directors vs. group leaders
  (-) Funding and group size
  (-) Tenure vs. Non-tenure
- Does not award PhDs.
Max Planck Society: Career Opportunities

• Post-Doc Positions: Advertised by each department / research group
  https://www.mpg.de/jobboard

• Group leader positions:
  (-) “Group Leader” within a department (directly advertised by each department)
  (-) “Max Planck Research Group Leader”, independent of the existing departments:
    Two routes: (1) Directly hired by a specific institute
    (2) “Free-floater” (Central application process each fall)
      https://www.mpg.de/max-planck-research-groups

(-) Funding: Usually for 2 PhD students and 1 Post-Doc
    plus start-up package, plus yearly budget for materials

(-) In general no tenure. Usually: 5+2+2 years.
Thanks for joining this talk.
Questions?

PICTURE OF THE RESEARCH GROUP DYNAMICS OF SOCIAL BEHAVIOR

(TO BE INSERTED HERE AFTER THE CORONA EPIDEMICS)