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研究課題名(和文) The Evolution of Choice Rules

研究課題名(英文) The Evolution of Choice Rules

研究代表者

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交付決定額(研究期間全体)：(直接経費) 1,300,000円

研究成果の概要(和文)：(Google translate)

協調的選択と個人的選択の境界を探るいくつかの論文が発表されました。これらの一部は、職場でのさまざまな選択ルールの成功と失敗を調査しました。一部の研究では、疎ネットワークでの協力につながる協力について検討しました。潜在的な機能へのさらなる作業関連の選択規則。私はさらにリスク態度を研究し、選択ルールがどのように相互作用し、母集団に集約できるかについていくつかの重要な結果を証明しました。さらに、私は広範囲に旅行し、数人の国際的な協力者の助けを借りてプロジェクトを追求しました。

研究成果の学術的意義や社会的意義

I examined the relationship between how people make decisions individually and collectively and how it affects behavior in and out of the workplace. I further examined how societies can end up converging to common outcomes even if people behave very differently to one another.

研究成果の概要(英文)：Several papers were published that explore the boundary between collaborative choice and individualistic choice. These included "Watercooler chat, organizational structure and corporate culture" (Games & Economic Behavior), which explored the success and failure of different choice rules in the workplace, "Agency Equilibrium" (Games) which examined uncertain environments, "Collaboration leads to cooperation on sparse networks" (PLOS-Computational Biology) which examined cooperation, "Agency, potential and contagion" (Games & Economic Behavior) which related choice rules to potential functions. I further studied "Risk attitudes and risk dominance in the long run" (Games & Economic Behavior) and proved some important results on how choice rules can interact and be aggregated in populations ("Conventions under heterogeneous choice rules" - R&R at Review of Economic Studies). Further, I travelled extensively and pursued the project with the help of several international collaborators.

研究分野：Evolutionary game theory

キーワード：Evolution Choice Heterogeneity Individual Collective

様式 C - 19、F - 19 - 1、Z - 19 (共通)

1 . 研究開始当初の背景

I had previously worked on several evolutionary projects, considering economic problems both abstract and specific using evolutionary methods. I had published many papers in the field and given many invited seminars around the world.

During both my Phd (Cambridge, 2011) and my first job at the University of Sydney, I built up a global reputation within my field. This allows me to find willing readers for my research and collaborators with whom to work.

The above preparation means that I am ready to start work on grant related projects almost immediately, with very little in the way of preparation time.

2 . 研究の目的

The goal was to gain a greater understanding of the type of behavioral rules that we can expect to see in the real world. Some areas studies include.

- Whether a variety of rules can persist or whether we can only expect to observe a single behavioral rule being followed in any given environment.
- The implications for how games are played when players follow a variety of different rules.
- Robustness of certain types of behavior to different rules followed.
- The robustness or otherwise of Bayesian decision making in economic problems.
- The relationship between collective decision making and individual decision making.

3 . 研究の方法

Mathematics, in particular evolutionary game theory was used to study these problems. Using the skills acquired in my early career period, I was able to use my grant money to focus my efforts on the particularly tricky and interested problems presented by the research topic.

I travelled around the world to present my results. This led to many opportunities to build contacts and to work with international researchers. Several of my publications that have arisen as a result of the grant are with international collaborators.

4 . 研究成果

Several papers were published that explore the boundary between collaborative choice and individualistic choice. These included "Watercooler chat, organizational structure and corporate culture" (Games & Economic Behavior, 2019), which explored the success and failure of different choice rules in the workplace, "Agency Equilibrium" (Games, 2019) which examined uncertain environments, "Collaboration leads to cooperation on sparse networks" (PLOS-Computational Biology, 2020) which examined cooperation, "Agency, potential and contagion" (Games & Economic Behavior, 2020) which related choice rules to potential functions.

I further studied "Risk attitudes and risk dominance in the long run" (Games & Economic Behavior) and proved some important results on how choice rules can interact and be aggregated in populations ("Conventions under heterogeneous choice rules" - R&R at Review of Economic Studies). I presented this paper at many prestigious institutions around the world. This promotional effort seems to be paying off. Many researchers helped me to build my ideas during this project and it looks set to be published in a very prominent ("top 5") international journal.

I carried out further work on choice in misspecified environments, one of the papers from

which is R&R at Economics Letters. Further, I examined the potential of choice rules to act as axioms for matching solutions, leading to the paper “Evolution and Rawlsian social choice in matching problems” which is R&R at Games and Economic Behavior. Finally, I submitted a note, “Maximality in the farsighted stable set revisited” which is now R&R at Econometrica.

In summary, the grant led to several publications:

- Precisely, 5 published papers in international refereed journals.
- 4 papers currently with Revise and Resubmit decisions at international refereed journals.

Finally, I travelled extensively with the help of the grant and pursued the project with the help of several international collaborators in Australia, Switzerland, Israel, the United Kingdom and Italy

5. 主な発表論文等

〔雑誌論文〕 計5件（うち査読付論文 5件 / うち国際共著 5件 / うちオープンアクセス 1件）

1. 著者名 Jonathan Newton	4. 巻 10
2. 論文標題 Agency Equilibrium	5. 発行年 2019年
3. 雑誌名 Games	6. 最初と最後の頁 1-15
掲載論文のDOI (デジタルオブジェクト識別子) https://doi.org/10.3390/g10010014	査読の有無 有
オープンアクセス オープンアクセスとしている (また、その予定である)	国際共著 該当する
1. 著者名 Heinrich Nax & Jonathan Newton	4. 巻 116
2. 論文標題 Risk attitudes and risk dominance in the long run	5. 発行年 2019年
3. 雑誌名 Games and Economic Behavior	6. 最初と最後の頁 179-184
掲載論文のDOI (デジタルオブジェクト識別子) https://doi.org/10.1016/j.geb.2019.05.001	査読の有無 有
オープンアクセス オープンアクセスではない、又はオープンアクセスが困難	国際共著 該当する
1. 著者名 Simon Angus & Jonathan Newton	4. 巻 16(1)
2. 論文標題 Collaboration leads to cooperation on sparse networks	5. 発行年 2020年
3. 雑誌名 PLOS - Computational Biology	6. 最初と最後の頁 e1007557
掲載論文のDOI (デジタルオブジェクト識別子) https://doi.org/10.1371/journal.pcbi.1007557	査読の有無 有
オープンアクセス オープンアクセスではない、又はオープンアクセスが困難	国際共著 該当する
1. 著者名 Jonathan Newton & Damian Sercombe	4. 巻 119
2. 論文標題 Agency, potential and contagion	5. 発行年 2020年
3. 雑誌名 Games and Economic Behavior	6. 最初と最後の頁 79-97
掲載論文のDOI (デジタルオブジェクト識別子) https://doi.org/10.1016/j.geb.2019.10.007	査読の有無 有
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1. 著者名 Jonathan Newton, Andrew Wait & Simon Angus	4. 巻 118
2. 論文標題 Watercooler chat, organizational structure and corporate culture	5. 発行年 2019年
3. 雑誌名 Games and Economic Behavior	6. 最初と最後の頁 354-365
掲載論文のDOI (デジタルオブジェクト識別子) https://doi.org/10.1016/j.geb.2019.09.004	査読の有無 有
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〔学会発表〕 計13件 (うち招待講演 13件 / うち国際学会 1件)

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 University of Grenoble (招待講演)
4. 発表年 2019年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 University of Toulouse (招待講演)
4. 発表年 2019年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 Bar Ilan University (招待講演)
4. 発表年 2019年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 Technion University (招待講演)
4. 発表年 2019年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 University of Florence (招待講演)
4. 発表年 2018年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 University of Sydney (招待講演)
4. 発表年 2018年

1. 発表者名 Jonathan Newton
2. 発表標題 Evolutionary game theory: a renaissance
3. 学会等名 IMT Lucca (招待講演)
4. 発表年 2018年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 AEI5 Conference (招待講演) (国際学会)
4. 発表年 2019年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 Waseda University (招待講演)
4. 発表年 2019年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 University of Manchester (招待講演)
4. 発表年 2019年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 ITAM, Mexico City (招待講演)
4. 発表年 2019年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 UNSW (招待講演)
4. 発表年 2019年

1. 発表者名 Jonathan Newton
2. 発表標題 Conventions under heterogeneous choice rules
3. 学会等名 Hitotsubashi University (招待講演)
4. 発表年 2019年

〔図書〕 計0件

〔産業財産権〕

〔その他〕

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6. 研究組織

	氏名 (ローマ字氏名) (研究者番号)	所属研究機関・部局・職 (機関番号)	備考