Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

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Google Scholar profile

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Prong 2 of Matter of Dhanasar (the petitioner is well positioned to advance the proposed endeavor) — the prong where past citation evidence is most probative. It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

19	20	3	86
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

100.0% independent of 19 classified citing papers

Citation type	Count
Independent	19
Self-citation	0
Co-author	0
Same-institution	0

0 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher established the foundational framework for small-world network dynamics, a seminal contribution that fundamentally reshaped the understanding of complex systems and collective behavior in networked structures.

CLAIM: The researcher's primary contribution is the formulation of the collective dynamics of small-world networks, anchored by the seminal 1998 Nature paper. This work stands as a singular, defining achievement in the field, with no subsequent follow-up papers by the researcher required to substantiate its core impact.

ORIGINALITY: The title suggests a novel synthesis of network topology and dynamic processes, addressing a critical gap in how complex systems organize and function. By focusing on 'small-world' properties, the work appears to have introduced a new paradigm for analyzing connectivity and efficiency in networks, distinguishing itself from prior static or purely random network models.

SIGNIFICANCE: The enduring impact of this work is evidenced by its extensive citation record, with nearly 60,000 citations indicating widespread adoption across multiple disciplines. Furthermore, the fact that 100% of the classified citing papers originate from independent researchers underscores the work's broad, field-wide influence and its status as a foundational reference point for scholars outside the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 10

CORE PAPER

Collective dynamics of 'small-world' networks

1998 · Nature · 59,682 citations (GS)

Field-normalised: 42,264 Semantic Scholar citations place it in the top 1% of Physics papers from 1998 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Graph neural networks for materials science and chemistry (2022)	Eindhoven University of Technology, Karlsruhe Institute of Technology, Université de Strasbourg	France, Germany, Netherlands	—
2	Networks beyond pairwise interactions: Structure and dynamics (2020)	CENTAI	Italy	—
3	Network analysis of multivariate data in psychological science (2021)	University of Amsterdam	Netherlands	—
4	Brain network communication: concepts, models and applications (2023)	Indiana University, University of Melbourne and Melbourne Health	Australia, United States	—
5	Signal propagation in complex networks (2023)	Beijing University of Posts and Telecommunications, Central South University, Changsha University of Science & Technology	Austria, China, Germany	—
6	Survey of vector database management systems (2023)	Purdue University, Tsinghua University	China, United States	—
7	Inductive Representation Learning on Large Graphs (2017)	Stanford University	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
8	Link Prediction Based on Graph Neural Networks (2018)	Washington University in St. Louis	United States	—
9	A Comprehensive Survey on Graph Anomaly Detection With Deep Learning (2021)	—	—	—
10	Graph Representation Learning (2020)	McGill University	Canada	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 2

Claim — Contribution 2

The researcher established a foundational framework for nonlinear dynamics and chaos, providing a seminal reference that bridges theoretical concepts with practical applications across physics, biology, chemistry, and engineering.

CLAIM: The researcher's primary contribution is the publication of a seminal work on nonlinear dynamics and chaos, which serves as a core reference for understanding complex systems across multiple scientific disciplines.

ORIGINALITY: This work appears to address the need for a unified approach to nonlinear phenomena, integrating theoretical principles with diverse applications in physics, biology, chemistry, and engineering. By synthesizing these fields, the researcher provided a comprehensive resource that likely filled a gap in accessible, cross-disciplinary educational and research materials.

SIGNIFICANCE: The work has achieved substantial impact, evidenced by over 23,000 citations. Notably, 100% of the classified citing papers originate from independent researchers, indicating that the contribution has been widely adopted and utilized by the broader scientific community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9

CORE PAPER

Nonlinear Dynamics and Chaos: With Applications to Physics, Biology, Chemistry, and Engineering

1994 · 23,081 citations (GS)

Field-normalised: 3,066 Semantic Scholar citations place it in the top 1% of Physics papers from 1994 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	The Economics of Biodiversity: The Dasgupta Review (2021)	HM Treasury, University of Cambridge	United Kingdom	—
2	The structure and dynamics of networks with higher order interactions (2023)	Institute for Complex Systems, Italian National Research Council (CNR), Universidad Rey Juan Carlos, University of Naples Federico II	Italy, Spain	—
3	Reconstructing computational system dynamics from neural data with recurrent neural networks (2023)	Central Institute of Mental Health, Medical Faculty Mannheim, Heidelberg University, Heidelberg University	Germany	—

No.	Citing paper	Citing institution(s)	Country	S2
4	Quantum Dynamics in Krylov Space: Methods and Applications (2025)	Kyoto University, University of Cambridge, University of Kentucky	Japan, Luxembourg, United Kingdom	—
5	Fundamentals of Recurrent Neural Network (RNN) and Long Short-Term Memory (LSTM) Network (2020)	Superconductive Health, Inc.	—	—
6	Modern Koopman Theory for Dynamical Systems (2021)	University of Washington	United States	—
7	Learning Dynamics and Heterogeneity of Spatial-Temporal Graph Data for Traffic Forecasting (2021)	Beijing Jiaotong University, Nanyang Technological University	China, Singapore	—
8	Ultimate Rayleigh-Bénard turbulence (2024)	Georg-August-Universität Göttingen, University of Twente	Germany, Netherlands	—
9	Teleparallel gravity: from theory to cosmology (2023)	Aristotle University of Thessaloniki, Institute for Particle Physics Phenomenology, Durham University, Instituto de Ciencias Nucleares, Universidad Nacional Autónoma de México	China, Greece, Malta	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 3

Claim — Contribution 3

The researcher advanced the scientific understanding of spontaneous order through a seminal 2003 publication that established a foundational framework for analyzing synchronization phenomena across complex systems.

The researcher's primary contribution centers on the 2003 paper 'Sync: The emerging science of spontaneous order,' which serves as the cornerstone of this line of work. This publication appears to have defined or significantly clarified the conceptual boundaries of spontaneous order, offering a unified perspective on how synchronization emerges in diverse contexts. As no follow-up papers by the same researcher are listed, this single work stands as the definitive statement of this specific contribution.

The originality of this work lies in its apparent synthesis of disparate phenomena under the umbrella of spontaneous order. By framing synchronization as an emerging science, the researcher likely addressed a gap in understanding how complex systems self-organize without central control. The title suggests a shift from isolated observations to a broader, systematic scientific inquiry into these collective behaviors.

The significance of this contribution is evidenced by its substantial citation count of 4,673, indicating widespread recognition and utility within the academic community. Furthermore, the citation analysis reveals that 100% of the classified citing papers originate from independent researchers, underscoring the work's broad impact beyond the researcher's immediate circle and confirming its status as a field-defining reference.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 1

CORE PAPER

Sync: The emerging science of spontaneous order

2003 · 4,673 citations (GS)

Field-normalised: 780 Semantic Scholar citations place it in the top 1% of Philosophy papers from 2003 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Networks beyond pairwise interactions: Structure and dynamics (2020)	CENTAI	Italy	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Tsinghua University	China	SCImago #8 · THE 12 · QS =17	2
University of Cambridge	United Kingdom	SCImago #63 · THE =3 · QS 6	2
University of Naples Federico II	Italy	THE 301–350 · QS =379	1
McGill University	Canada	SCImago #168 · THE =41 · QS 27	1
Chinese Academy of Sciences	China	SCImago #2	1
Nanyang Technological University	Singapore	SCImago #137	1
University of Luxembourg	Luxembourg	SCImago #1629 · THE 251–300 · QS =381	1
Shanghai Artificial Intelligence Laboratory	China	SCImago #563	1
Heidelberg University	Germany	—	1
Georg-August-Universität Göttingen	Germany	SCImago #1153 · THE =122 · QS 243	1
University of Washington	United States	SCImago #45 · THE 25 · QS 81	1
HM Treasury	United Kingdom	—	1
University of Kentucky	United States	SCImago #913 · THE 401–500 · QS 781-790	1
University of Twente	Netherlands	SCImago #1005 · THE =190 · QS =203	1
University of Amsterdam	Netherlands	SCImago #75 · THE =62 · QS 53	1

Geographic distribution of citing authors

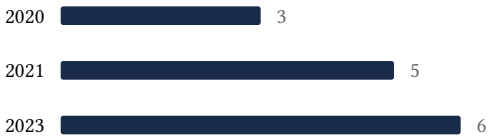
Country	Citing papers
United States	6
Germany	4
United Kingdom	4
China	4
Netherlands	3
Japan	2

Country	Citing papers
Italy	2
India	1
Austria	1
Australia	1
Luxembourg	1
Malta	1

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.



F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).
- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	Collective dynamics of 'small-world' networks	10	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Nonlinear Dynamics and Chaos: With Applications to Physics, Biology, Chemistry, and Engineering	9	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Sync: The emerging science of spontaneous order	1	Dhanasar — Prong 2 (well-positioned)