

8. Negotiation Engineering and Computational Diplomacy

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Key concepts

Negotiation engineering is a practice-oriented, but at heart mathematical, approach to negotiations. It includes classical methods from game theory and more recent ideas on principled algorithmic distribution of resources or responsibilities, and integrates findings from the behavioral sciences to deliver practicable negotiation solutions for the future.

Computational diplomacy is an emerging academic field, which is part of the broader development of computational social sciences, and relies on the so-called 'computational thinking' approach, which includes data science, mapping, modelling, numerical simulations, artificial intelligence and network analysis. The theoretical framework of International Relations (IR as an academic discipline) may come to be redefined when the full extent of digital age will potentially be understood and exploitable, thanks to communication tools, new algorithms and computing power.



Scientific Anticipatory Brief abstract

Beyond its core activity of negotiation, today's diplomacy entails a broad scope of practices, such as intelligence gathering, image management, and foreign policy implementation. The emergence of new communication channels and data sources for states and other relevant international stakeholders has led to a transformation of diplomatic skills and tools. Global actors are increasingly using the capacity of computing power to offer analytical and communicational tools to serve their policy agendas. *Negotiation engineering* and *computational diplomacy* are two complementary fields of research and practice that will play an increasing role in international relations.

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Trends at 5 and 10 years - computational methods applied to diplomacy and negotiation

In the short-to-mid-term future it is conceivable that diplomacy will undergo changes not unlike what the legal tech revolution seems to put in place in the field of litigation and jurisprudence. Computational methods will offer significant leverage and can be used to check data integrity and detect fake news. They can further be used to automatically infer emotions in messages or any text data and predict, in real-time, the evolution of a diplomatic situation and the impact of scenarios of proposed solutions, to 'scientifically' fundamental choices about the preferred framework for diplomatic action.

Trends at 25 years - data-driven decision-making and automatization

On a longer time-scale, strongly data-driven decision-making and automatization may invade various other branches of diplomacy. It seems likely that research facilities and the public sector will co-operate more actively in order to harvest and critically assess cutting-edge research and channel it effectively towards diplomatic applications. In sum, ideas and insights from STEM fields, i.e. the quantitative approach to social sciences, are likely to become more prevalent in diplomacy, a field where such thinking has perhaps been less prevalent in the past. This poses new challenges and opportunities.

These future developments will impact conflict resolution and the diplomatic profession itself in various ways, given the scientification of diplomacy and future science and technology challenges in international relations. Collaboration between STEM and social sciences will be key.

Detailed table overview of trends at 5, 10 and 25 years

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Example of breakthroughs

5
years

- Digitalisation of negotiations through machine-learning (text and data mining, digital negotiation assistants..)

10
years

- Scientification of negotiation and diplomacy due to advances in e.g. gene-editing, quantum technologies, climate research, AI, ... and their influence on global governance and multilateralism
- Increased used of digital tools and behavioural models in negotiation and diplomacy

25
years

- Provision of real-time information such as scenario prediction, fact checking or deals advisory during an ongoing negotiation, including data-driven decision making and automatization