

Scientific Strengths



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Foreword

Scientific Strengths, a handsome portfolio

It is a good thing to reflect together on the question of where our scientific strengths lie. What are the research topics that Tilburg University wants to be associated with? In other words: What is our research profile? And can this unique expertise help us advance society? Where can we make an impact, as researchers, together with our partners in the field?

It is becoming increasingly clear where these strengths lie, what the cross-border impact topics are, who the interdisciplinary players and who our external partners are. It is getting clearer and clearer as well what the communities are that play a major role in this process characterized by perpetual motion. A process that is bound to be in motion because society, the issues involved, the societal partners, are constantly evolving as well. Advancing together will eventually lead to an even better exchange of knowledge and experience to arrive at new innovative ideas and solutions.

A clear research profile is important, internally for ourselves, as well as externally, in communicating to various stakeholders, so that our scholars and scientists' core expertise and that of the university as a whole becomes apparent. Partners, both existing and future ones, can pick up on this and turn to us for help

in analyzing (*understanding*) and addressing (*advancing*) their questions/problems. That is why we need to make clear what our scientific strengths are and what we can be relied on to provide in terms of academic excellence.

We hope this overview of our Scientific Strengths will stimulate cross fertilization, cooperation, and collaboration - across Schools, departments, and disciplines. May it serve as a preamble and a call to further dialog and discussion, touching on questions like: Is anything missing in our humanities and social sciences profile, what topics could be added to further strengthen that profile?

We are proud to present the scientific portfolio contained in this book.

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Tilburg School of
Economics and
Management

TISEM

Scientific Strengths

Data Science, Operations Research, and Data-Driven Value Creation

contact: Dick den Hertog

Fundamentals

Vast amounts of data are currently generated each day. Data Science studies how such data can be used to obtain more insights and ultimately make better decisions. Algorithms and models are developed to transform data into information and insights, and to find the best solution among a huge number of possible alternatives. In predictive analytics, data is used to predict what will happen in the future or when some of the conditions will be changed. Machine Learning is often used for this. Prescriptive analytics goes one step further and tries to predict which actions should be undertaken. Mathematical Optimization delivers a key set of tools for prescriptive analytics.

Applications

Besides the obvious applications in marketing, HRM, logistics, and finance to create economic value, Tilburg University has a special focus on “Data Science for the Social Good”, i.e. to create social value. More specifically, Data Science is used to reach some of the Sustainable Development Goals of the United Nations. Tilburg University focusses on:

- **Data Science for Zero Hunger**
Example: The development of prescriptive models to optimize the food supply chain of the World Food Programme to further alleviate world hunger.
- **Data Science for Global Migration**
Example: Analytics is used to gain improved insights into human trafficking flows and the living conditions of refugees.
- **Data Science for Vulnerable Youth**
Example: Machine Learning is applied to detect the most important hurdles vulnerable youths face and to give them a Smart Start.
- **Data Science for Health & Well-being**
Example: The design of optimization techniques to optimize radiotherapy treatment plans for cancer patients.

Trends

Data use is subject to increasing restrictions (e.g. GDPR). As society is becoming more aware of the dark side of Data Science, the responsible management of data is becoming more important, with a greater focus on creating social value from data. Predictive and prescriptive analytics are increasingly combined, and Artificial Intelligence is becoming a hot topic.

New Dynamics in Business Strategy, Entrepreneurship, and Innovation

contact: Geert Duysters

Fundamentals

Long-term viability and survival have become major challenges for new and existing companies. We need to explore the interplay between strategy, entrepreneurship, and innovation to understand the survival of companies under conditions of rapid change. Strategy concerns long-term planning to achieve a long-term goal, whereas entrepreneurship focuses on designing, building, and running a new business. Innovation has become a critical factor in achieving business success but has proved to be difficult for large companies. These firms therefore resort to new forms of organization such as strategic alliances, mergers and acquisitions, and corporate venturing.

Applications

Our research is divided into two themes:

- **Strategy and Performance**
We focus on firms' strategic choices and performance from a relational perspective. We explore how firms and other organizations are embedded in bilateral and multilateral collaborations, as well as networks and ecosystems. Particular attention is paid to innovation and learning.
- **Corporate Entrepreneurship and Corporate Venturing**
We focus on how large established companies learn and innovate by creating an entrepreneurial mindset and by acting on new opportunities. Particular attention is paid to corporate venturing. This is where large firms invest in, or enter into a joint venture with, emerging and innovative firms to gain a competitive advantage in terms of growth or innovation.

Trends

Companies face increasingly turbulent operating conditions. Global competition, rapid technological change, and geopolitical changes call for a new perspective on strategy. Core competencies have become liabilities in rapidly changing environments. A firm's long-term viability has become dependent on its ability to reposition itself, change its business model, and learn and innovate effectively. This requires established organizations to become more entrepreneurial, to set up ventures, and to innovate by a mix of internal learning, acquisitions, and alliances.

Managerial Reporting to Insiders and Outsiders

contact: Eddy Cardinaels

Fundamentals

A fundamental role of business controllers and CFOs in companies is to provide information to capital markets, banks, and investors on how the firm is performing with regard to profits and other goals (e.g. Corporate Social Responsibility, future growth, employee concerns). These disclosures are often strategic in nature due to proprietary concerns or managerial incentives. Companies are often less strategic when it comes to providing information to insiders within the firm. This information mainly focuses on aligning the interest of employees with organizational goals, in such a way that employees make value-enhancing decisions.

Applications

Our research is divided into three themes:

- **Information to outside investors**
This theme studies information provision in earnings releases, conference calls, MD&As, and other disclosure outlets. Are managers biased in their disclosures and can we draw conclusions from the fact that managers avoid talking about certain themes? How does the capital market react to such disclosures?
- **Assurance of information**
Audit firms audit information provided to external stakeholders with the goal of maintaining high financial reporting quality. However, managers have different incentives to buy different levels of assurance and audit offices may vary in terms of the quality they provide.
- **Reporting for insiders**
This theme examines how information, such as customer lifetime value, activity-based costing, beyond budgeting, and presentation of that information, can help managers to make optimal decisions. New forms of incentive schemes to motivate employees to be productive or to stay creative are also examined, as well as policies that can motivate managers to report their information more accurately.

Trends

As company disclosures are becoming lengthier and many other types of non-financial information are offered besides financial information (CSR and forward-looking information), reporting and assurance of that financial information are a growing challenge. Recent trends in language studies and communication research can offer new insights into the disclosure of information in capital markets (e.g. disclosure readability and deceptive language). Also, the style of management (optimism, biomarkers and language) is gaining more attention. With regard to internal reporting, companies are making more use of non-financial information, and many workplaces (e.g. Google, Tesla, etc.) rely more than ever before on the intrinsic motivation of their employees. This is leading to a greater demand for new forms of incentive schemes to motivate employees (e.g. RPI, Recognition and Tangible rewards).

Marketing

contact: Inge Geyskens and Marnik DeKimpe

Fundamentals

Our marketing research covers three subdomains: marketing strategy, consumer behavior and marketing modeling. *Marketing strategy* focuses on developing theories to understand firms and markets, with an emphasis on managerial and strategic issues (e.g. buyer-supplier relationships and branding) and draws upon theories and methods from strategic management, organizational behavior, and industrial economics. *Consumer behavior* draws on psychology to study both micro-level processes (e.g., brand choice) and macro-level issues (e.g. materialism). *Marketing modeling* uses a rigorous mathematical approach to improve the actions of managers and offer a deeper understanding of various marketing phenomena (e.g. pricing and advertising).

Applications

Our research has many potential applications as summarized below.

Branding: branding strategy, private label strategy, product harm crises, and brand loyalty

Promotions and advertising: promotion effectiveness, advertising effectiveness, and digital marketing

Distribution channels and retailing: channel design and channel relationships, online channels, omnichannel, retailer power, retail assortments, and retail competition

Shopping behavior: consumer search and consumer learning, preference formation, information processing, and demand for variety

Consumer psychology: consumer emotions, consumer well-being and consumer materialism

Customer lifetime value: customer acquisition, customer engagement, customer retention, churn, customer complaints, and service recovery

Marketing research: forecasting, A/B testing, eye tracking, and machine learning

Trends

Marketing is a dynamic discipline, and new trends are constantly entering the marketplace. Some of the trends we focus on are:

- increasing consumer welfare;
- going digital, going direct;
- retailer power and the blurring of retail formats;
- leveraging Big Data and smart algorithms to drive ROI on marketing activities.

Sustainable Development and Environmental Policies

contact: Daan van Soest

Fundamentals

Combating climate change is one of the most urgent societal challenges we face. Greenhouse gas emissions need to be reduced to virtually zero by 2050 to prevent dangerous increases in the earth's temperature. Achieving this objective requires a rapid increase in the share of renewable energy sources in the energy mix and a sharp decrease in the demand for energy. All sectors in the economy – firms, consumers, and the government – need to cooperate if the transition towards such a sustainable economy is to be successfully implemented.

Applications

Our research is divided into four themes:

- **Corporate Social Responsibility (CSR)**
CSR is an increasingly important strategy for companies. In this theme, researchers analyze to what extent CSR contributes to the sustainability agenda. A major challenge is the conceptual and empirical identification of the many possible (causal) relationships between CSR activities and impacts, as many factors other than CSR contribute to the impact of sustainability policies. Another limiting factor is a lack of data on CSR, especially for small and medium-sized companies.
- **Climate Action and Resource Efficiency**
The efficiency and effectiveness of various environmental policy instruments like energy taxes, energy labels (EPC), and tradable emission permits (the European Emissions Trading System for carbon) are analyzed in this theme.
- **Circular Economy**
This concerns the reusability of materials in society. This is not just about recycling, but also how products can be designed to facilitate the recovery of materials. The main challenge here is how to enhance coordination within and between sectors to improve reusability and reduce the use of virgin materials.
- **Environmental Policy Impact Evaluation and Behavioral Economics**
Most environmental policies are top-down interventions in which the government aims to regulate polluting behaviors. This line of research seeks to uncover how the effectiveness of environmental policies can be increased by making use of psychological insights.

Trends

The most important trend is the pursuit of evidence-based environmental policies. Given the challenges society is facing, we must ensure that the policies we implement are as effective as possible. Economic research makes increasing use of experimental methods, in which individuals (consumers or firms) are allocated to different groups, some of which are confronted with different types of interventions. By comparing the (environmental) outcomes of these groups to those in a control group, we obtain a precise estimate of the absolute and relative effectiveness of the various interventions. Researchers at Tilburg School of Economics and Management apply this methodology to topics such as reduced energy consumption by consumers and improved waste sorting by households in the Netherlands, and improved forest protection in developing countries.

Asset Pricing, Corporate Finance, and Banking

contact: Joost Driessen

Fundamentals

Our research in the field of finance focusses on three subthemes. Asset Pricing research focuses on understanding and explaining prices of financial assets, such as stocks, bonds, and derivatives. This kind of research also develops models to measure risk and to construct optimal financial portfolios for investors. Within Corporate Finance, we study the financing decisions of firms, the governance of firms, and the financing of startups and small firms. In the field of Banking, we examine the role of lending relationships, risk-taking of banks, banking regulation, and bank history. For all of this research, we develop models that offer normative advice as well as models that aim to describe and understand observed patterns. For the second type of model, considerable attention is paid to the irrational behavior of participants in markets and firms.

Applications

Our research aims to answer many key questions about the financial sector. Examples are:

- How should investors (from pension funds to retail investors) invest their financial wealth?
- Why are the prices of financial assets so volatile? Why do we trade so much in financial markets?
- When should firms issue equity or bonds?
- Does corporate governance affect how a firm deals with its different stakeholders?
- Does banking regulation enhance financial stability?

We use two popular methodological approaches to answer such questions. First, we develop theoretical models that yield plausible explanations which can then test empirically. Second, we make use of “natural experiments” to identify causal relationships.

Trends

Several trends can be observed. First, there is a growing interest in using insights from psychology and behavioral economics to answer key questions within the field. Second, the link between financial markets and the macroeconomy is receiving renewed attention. Thirdly, there is also an interest in recent technological developments (“Fintech”) such as peer-to-peer lending platforms. Finally, finance researchers nowadays also study the history of financial markets and firms, since this offers new insights in today’s markets.

Health Economics and Aging

contact: Tobias Klein

Fundamentals

In the Netherlands, about 14 percent of GDP is spent on health. Designing a system through which this money is collected, redistributed and allocated to providers is a complex task.

It involves, among other things, regulating healthcare providers and insurance companies, designing a risk equalization scheme, and providing incentives to the insured, for instance in the form of a deductible. Making choices along those lines is a difficult undertaking, as it involves a trade-off between costs and the benefits of additional treatments, as well as a focus on prevention.

In this context, there is a growing interest in evidence-based decision-making. At Tilburg School of Economics and Management, we bring together empirical researchers to work on a variety of topics in health economics, such as researchers who have experience and expertise in conducting quantitative empirical work with large datasets, researchers involved in qualitative research, and researchers modeling individual decision-making and the functioning of markets.

Applications

Tangible questions that we focus on include:

- How do individuals respond to cost-sharing incentives and does this reaction differ across groups in society?
- How much of the variation in healthcare expenditures across patients is due to individual differences and how much originates in differences across suppliers?
- What are the effects of different contracting models between insurance companies and healthcare providers?
- What are the effects of increasing market transparency, for example by publishing treatment prices?

Trends

There are at least two major tendencies in the field that our research can contribute to. First, researchers are gaining access to increasingly detailed data. This calls for new methods that can be used, for instance, to measure how desirable certain treatments are. Second, economic models of individual behavior need to be enriched so that they can also capture many of the frictions present in the real world. Such frictions could be due to a person's misperceptions related to the consequences of not seeing a doctor, the lack of information about insurance characteristics, or, more generally, the inability to cope with complex decisions in the context of health.

Digitization and Supply Chain Networks

contact: Carol Ou

Fundamentals

Digitization and supply chain networks refer to the utilization of technology and sophisticated methods to solve business, supply chain, and societal problems. Research on digitization is primarily concerned with the design and application of technology at different levels, i.e. individual, corporate, marketplaces, and society. Research on supply-chain networks seeks to understand and advance the practices of supply chain management. The research covers the life cycle of purchasing, production, logistics and distribution, buyer-supplier relationships, contract management, service and maintenance, decision-making, and network collaboration.

Applications

Our research focusses on four themes:

- **Digital transformation and business analytics**
We explore how digital technology and business analytics can be leveraged to transform the products, processes, and strategies within an organization or across a supply chain, and specifically in audit, healthcare, and e-commerce.
- **Enterprise architecture and business network**
We examine how enterprise components and networks, service-oriented architecture, business process, and e-business value chains can be designed.
- **Strategic supply chain management**
We study how supply chain networks can be managed, accelerated, and sustained. Our research covers purchasing, distribution and logistics, production contract, and supplier relationships.
- **Dynamics and collaboration of supply chain management**
We investigate how to apply dynamic simulation to diagnose supply chain problems and we seek to answer how the integration and collaboration of the local and global supply chains can be designed.

Trends

Digital technology can elicit huge transformations. Intelligent supply chains have become crucial to the success of the entire network. This requires the orchestration of people, capacities, work processes, and infrastructure. Maximizing the benefit from these trends will require rigorous research to examine the use of emerging technologies in operations, marketing and service, human resources, finance and audit, healthcare, and intra-organizational- and inter-organizational activities. The global trade environment and fast-changing markets require further enhanced decision-making in the entire product life cycle management process so that an efficient and effective supply chain management can be realized.



Decision-Making and Human Behavior in Economic Contexts

contact: Sigrid Suetens

Fundamentals

Individuals make choices. They choose what to study, which job to take, how much effort to put into a job, how to invest money smartly, who to vote for, who to marry, and which friendships to invest in. Organizations are composed of individuals who make choices. A CEO chooses whether to expand his/her company, a personnel manager chooses who to hire and a financial manager plans the financial budget. Sometimes choices involve large stakes and sometimes small ones. Sometimes the individual stakes differ from the stakes for society. Our research concerns decision-making by individuals in an economic context, that is a context in which something is at stake.

Applications

- Individuals differ in the extent to which they (a) like to engage in risky behavior, (b) discount the future, and (c) take into account others' well-being when making choices. We study these risk, time and social preferences, and their effects on well-being and economic development.
- Optimal choices often depend on choices of other decision-makers, and choices of others are influenced by one's own choice, giving rise to strategic behavior. This occurs, for example, in markets with imperfect competition, which are studied in the field of industrial organization. We use theoretical and experimental games to study decision-making in such settings.
- The common choices of individuals often have a large impact on society (for example, on the environment). We study the design of financial and other incentives that help to align individually optimal and societally optimal choices.

Trends

Specific topics we will focus on in the coming years are:

- how individuals deal with ambiguity;
- how contact with dissimilar others influences attitudes and behavior towards them;
- optimal climate policies and the effect of demographics on climate change;
- the relation between aspirations and poverty, and economic development;
- the design of optimal patents and standards;
- the design of optimal health insurance.

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Tilburg Law School

TLS



Scientific Strengths

Crime and Prosecution

contact: Toine Spapens and Tijs Kooijmans

Fundamentals

Security is a basic human need. Criminal law's core business is to protect citizens against intrusions of property, limb, and life as well as the reparation of harms inflicted on persons and society. Responses to crime require a wide range of coordinated efforts in the fields of repression, prevention, and resilience, but the criminal justice system remains a cornerstone of successful interventions. We apply broad-spectrum approaches to 'undermining' (subversive) crime. The term refers to organized crimes and its detrimental effects on society's integrity, but also includes corporate crime, in the shape of companies that violate environmental and other regulations and skim off taxes. Green criminology (environmental crime) is a specific domain of attention. Crucial to society's responses is our understanding of crime at the different levels of individuals, families, phenomena, markets, and systemic drivers.

Applications

Crime research is intrinsically practical. We focus empirically on relatively unknown aspects of crime, but also on how to improve (cross-border) enforcement and other interventions, in North Brabant, the Netherlands, and the EU. In the context of prosecution, we focus on criminal procedure including the application of new techniques such as neuroscience. For example, neuroimaging applications may contribute to answering crucial questions regarding guilt, legal responsibility, and risks of recidivism. Outcomes of our work are regularly used in political debates, discussed with practitioners, picked up by the media, and translated into theoretical academic work. Tilburg University has established a community of crime researchers based at different faculties and the Jheronimus Academy of Data Science to combine our strengths.

Trends

We observe four key trends:

- Crime is increasingly transnational and innovative, but organized and corporate crime remain particularly under-researched and require our attention.
- ‘Hard’ (repressive) and ‘soft’ (e.g. prevention; helping criminals who are also victims) approaches must be coordinated, especially at the family level, and it is essential to improve our knowledge about ‘what works’.
- ‘Smart’ surveillance and ‘Big Data’ require critical research. Such techniques may contribute to preventing crimes, but in the hands of non-democratic governments and private companies, they exert disastrous effects on privacy and the quality of life.
- Climate change is a huge global challenge, and it is essential to provide insight into harmful and illicit activities as well as into conflicts, international crimes, and other secondary effects of global warming.

Environmental Law for the Anthropocene

contact: Jonathan Verschuuren

Fundamentals

Since the industrial revolution, we are witnessing drastic changes in the earth’s biosphere, all of which are caused by humans. Unprecedented loss of biodiversity, changes in the planet’s climate, massive deforestation, and severe plastics pollution of oceans are but a few of the problems the earth and its inhabitants are facing. We have been trying to address these problems through environmental law, but with somewhat limited success. Environmental law is an area of law that operates across legal disciplines, including international law, EU law, human rights law, constitutional law, administrative law, criminal law, private law, and at all levels of governance (local, provincial, national, regional, continental, and global). As such, it governs a range of different stakeholders, including government bodies, courts, industries, farmers, consumers, and non-governmental organizations. Environmental law also impacts a range of government policies, such as energy, industry, agriculture, fisheries, planning, infrastructure, public health, and nature conservation.

Applications

The Tilburg University environmental law team focuses on several areas within the broader field of environmental law. These are climate change law (climate change adaptation and mitigation of greenhouse gasses), energy law (towards carbon-free energy), and biodiversity/nature conservation law. Other, more specific research themes are the role of human rights in addressing corporate environmental impacts, technologies as targets and instruments of environmental law, and the role of corporate and private environmental regulation.

Trends

It is generally accepted that our regulatory approach towards current environmental challenges needs to change. Regulatory approaches need to focus on local initiatives and the individual behavior of consumers, as well as on global scale changes in the way we produce our food, generate our energy, et cetera. We examine which smart combinations of regulatory instruments at all levels of governance will effectively help us achieve a broad and deep transition towards a sustainable society within the environmental boundaries of the planet.

Global Law

contact: Hans Lindahl, Morag Goodwin, and Han Somsen

Fundamentals

'Global law' needs to be understood in a broad, inclusive sense. The term does not solely refer to those legal regimes that are of universal application. It also signifies an endeavor to construe a new lens through which to understand law in the age of globalization. This also entails a search for a 'grammar' of law that does not view state law as the norm but thinks of law in terms of a network of interacting, competing, and overlapping legal systems – ranging from local to global systems.

Applications

The major legal questions our research addresses are:

- the articulation of a new legal theory for the global network of legal and governance systems as an alternative to the traditional state-centered and positivist legal theory that has undergirded legal teachings for over a century;
- globalization, justice, and the problem of inclusion/exclusion;
- becoming a lawyer sensitive to the political and ethical dimensions of law in a global context;
- global environmental law as an exemplary domain of the kinds of issues that are the focus of conceptual, institutional, and normative developments in a global context.

Trends

Our research aims to outline methodologies and normative/institutional frameworks that can orient stances with respect to the following kinds of questions:

- What might count as global justice in light of the globalization of legal inclusion and exclusion unfolding before our eyes?
- How do we conceive of a *new modus operandi* for environmental regulations, which can no longer be predicated on a territorial (domestic, regional and international), public, and anthropocentric paradigm?
- How do we redefine core legal concepts, such as legal authority, validity, rule of law, democracy, and development in a context of global legal pluralism?

Governance of Economic Activity in the Digital Age: Institutions, Competition, and Innovation

contact: Enrico Partiti

Fundamentals

Innovations in information and communication technology (ICT) are having an enormous impact on the creation and diffusion of information through connectivity, societal interaction, institutional structures, production methods, manufacturing and services supply, as well as competition. TILEC researchers study the design, implementation and operation of the structures, legal or otherwise, needed to sustain economic activity in the digital age. In doing so, they take into account the role played by Big Data and artificial intelligence in the functioning of markets. The legal domains they consider in this research are contract law, corporate law, trade law, intellectual property law, competition policy, and economic regulation.

Applications

Our research focuses on the following three themes:

- **Institutions**

We study formal and informal institutions governing the production and exchange of goods or services and also contribute to other public policy objectives with a view to strengthening resilience and adaptability.

- **Competition**

We examine the design and application of competition policy, paying special attention to how economics can be integrated into the competition policy framework.

- **Innovation**

We conduct research into the phenomenon of innovation, broadly construed as the creation and diffusion of new knowledge. In particular, we consider how a regulatory framework conducive to innovation can best be established.

We employ multidisciplinary approaches encompassing institutional analysis, law and economics, comparative legal methods, political economy, organizational behavior, industrial organization, and experiments. Our research organically translates into policy advice at the national, European, and global levels.

Trends

Specific issues that we will focus on in the coming years include:

- the strategies of resilience and transformation used by private rule-making bodies to remain relevant and powerful;
- the design of digital markets to meet both efficiency and fairness objectives;
- the governance of data-driven markets, including regulation of algorithms and data-sharing obligations;
- the integration of dynamic efficiency concerns into competition law;
- individual and collective licensing regimes, enforcement mechanisms, IP-negative zones, and the public domain;
- mechanisms to improve patent screening and enhance the functioning of the patent system.

Labour Law and Social Policy

contact: Nuna Zekic and Mijke Houwerzijl

Fundamentals

Labour law and social security law are two interrelated fields of law that prevent work and income security being pushed below the levels that a society deems acceptable. Together, they impact labour markets and social protection by placing restrictions on the contracting parties' freedom to contract on whatever terms they wish, by setting minimum labour standards, and by establishing employee insurance and a social safety net. These institutions were and are created not only by the state, but also by autonomous groups, in particular, trade unions and employers; the interaction between the two is a central theme in labour law. Another important feature of labour and social security law and policy making is the large influence of international and European norms in these areas.

Applications

Our research aims to deepen the understanding of the evolution of labour law, employment relations, and social policy for the benefit of both academic scholarship and socio-legal practice. We therefore combine doctrinal research into labour law and social security law, with multidisciplinary research in the reality behind the law in 'the world of work'. For example, we research legal frameworks, but also the effects of the legal frameworks on the labour market. Our research includes the interplay between national, European, and global levels of labour law and governance.

Trends

We focus on the challenges for labour rights and the social protection of digitalization and globalization of work, such as the growth of non-standard work, vulnerable groups of workers, and new socioeconomic inequalities.

Specific topics of research in the coming years are:

- new patterns of work and the social protection of workers;
- impact of 'robotization' and 'platformization' on decent employment;
- inclusive labour markets and HRM policies;
- balance between (fundamental) social and economic rights, also in light of the proclamation of the 'European Pillar of Social Rights';
- cross-border application and enforcement of labour law and social security law.

Technology Regulation, Data Protection, and Big Data in the era of AI

contact: Ronald Leenes and Eric Tjong Tjin Tai

Fundamentals

The rise of IT has gone through several waves and is entering a crucial phase due to the availability of massive amounts of cheap computer power and storage as well as advances in Artificial Intelligence (AI). There is a real danger that IT will outstrip the capabilities of state regulation to keep up with new developments. The legal community is searching for new concepts and tools to deal with this. Technology may help regulate activities through, for example, content recognition and privacy-by-design.

Applications

Our current research mainly focuses on:

- privacy and data protection in relation to:
 - information-induced harms,
 - development of new privacy paradigms that do not take 'the home' as their natural anchor point,
 - informational self-determination;
- understanding data driven-markets and their social, economic, and ethical ramifications (data justice on a global level);
- technology regulation and regulation through technology in data-driven markets, the internet, energy, climate, health, AI, and robotics;
- regulation of data processing and privacy through property law and competition law;
- regulation of platforms, blockchain, and distributed autonomous organizations;
- liability for data, software, and algorithms;
- legal analytics.

Trends

The main current trend is a reversal of the techno-optimism of the previous decade. Lawmakers are concerned to regulate against possible abuses and dangers of IT encroaching on new domains. The key trends that we see are:

- innovative techniques for regulation of data use and abuse;
- protection of sensitive data (privacy) through private enforcement (to strengthen public enforcement);
- cybersecurity;
- monitoring and surveillance of algorithms;
- social effects of the widespread use of data and AI by businesses and governments.



Public Governance

contact: Frank Hendriks

Fundamentals

The public governance approach assumes that wicked societal problems cannot be adequately solved using a single disciplinary perspective. Instead, insights from public administration, economics, law, and politics need to be combined to address important challenges such as the European migration crisis, economic development, the legitimacy of the public sector, and organized crime. Due to its focus on themes, rather than disciplines, the public governance approach is genuinely multidisciplinary in nature.

Applications

Our overall aim is to shed light on governance issues using an approach that integrates different perspectives and levels of analysis. More specifically, our research focuses on themes such as:

- the economic and social effects of governance institutions and governance strategies;
- the resilience and integrity of institutions;
- the efficiency and productivity of public sector organizations;
- the regulation of economies;
- the adaptation, demise, and survival of political and governance institutions in changing societies.

Trends

Societies today face daunting governance challenges related to massive flows of migration, transitioning to sustainable and circular economies, responding to cybercrime, providing economic stability, and maintaining or creating monetary stability. These governance challenges can be better understood and addressed by combining different insights and perspectives. In particular, these challenges require a rethinking of the concept of good governance, the relationship between democratic innovations and legitimacy, the future of regional governance, and the role of public professionals. We study these topics empirically using a combination of qualitative and quantitative methods that include ethnography, interviews, (quasi-)experiments, and surveys.

Rule of Law

contact: Randall Lesaffer and Phillip Paiement

Fundamentals

The Rule of Law is comprised of the overlapping institutions, rules, and procedures by which legal and political authority is constrained to prevent its arbitrary use or abuse. Procedural rules are in place to prevent abuse by legal and political authorities. These rules establish access rights to tribunals and the fairness of their procedures. Fundamental rights also provide substantive restraints on public authority by establishing obligations for legal and political institutions with respect to the basic rights of citizens and residents. Institutions, such as ombudsmen, also provide essential guarantees against the misuse of public authority. In its modern form, Rule of Law practices emanate from national, European, and global legal systems.

Applications

Our research aims to compare, analyze, and explain how Rule of Law practices effectuate constraints on the abuse and misuse of authority. This research therefore engages with both the ideality and reality of Rule of Law practices in societies across the world. The goal is to achieve a better understanding of how configurations of limits to authority can foster the emancipation of communities and individuals. Our research focuses on:

- The theory of fundamental rights, constitutionalism, and the relationship between legal institutions and political authority;
- Doctrinal legal research into public law, with a focus on constitutionalism, fundamental rights, administrative law, and procedure;
- The history of the rule of law in the international context.

Trends

Globalization and technological innovation are two of the biggest impacts for contemporary Rule of Law practices, and they can prove both antagonistic and facilitative for achieving limitations on public authority that foster emancipation.

Specific topics that we will focus on in the coming years are:

- Constitutionalism, citizenship, and diversity;
- ‘Big Data’ in administrative law and public administration;
- Interaction between national and European administrative courts.

Private Law and Multilevel Regulation

contact: Rob van Gestel and Marc Loth

Fundamentals

Private law, meaning the rules applicable to the legal relationships between citizens and between businesses, is a fundamental ordering mechanism for society. Its rules and practices give guidance and certainty in determining which rights people have in economic and family relationships. Since those relationships are often created across geographical and jurisdictional borders, private law itself is developed at different levels of regulation: the national, the European, and the global level, and also through practice and custom at the local or regional level. Private law is therefore studied, as a national system of rules and practices, but always in the context of multilevel regulation.

Applications

Our research aims to deepen our understanding of private law for the benefit of legal scholarship and practice. We therefore study how contracts operate in society, how the rules for liability in tort law correspond to the needs of victims, how courts can design proceedings in family law cases, and how financial law and insolvency law can respond to questions arising in the aftermath of the financial crisis.

Our research focuses on:

- Doctrinal legal research into private law relationships, with a particular focus on Dutch law, but also including comparative legal research in Europe;
- Methodological questions, with a particular focus on interdisciplinary research;
- International aspects of private law, looking at the interplay of Dutch and European private law, and exploring broader questions of transnational private regulation.

Trends

Specific topics that we will focus on in the coming years are:

- Reconstructing private law relationships in relation to complex networks in which multiple parties cooperate (e.g. in healthcare, construction, and online platforms);
- Liability of private regulators, for example for inadequate standard setting;
- Contract law and data protection;
- Development of private law through judicial dialogues between national and European courts

Sustainable Business Law and Business Taxation in the Information Era

contact: Hans Gribnau and Jing Li

Fundamentals

Business law and business taxation encompass all rules and norms on how to form and run businesses. Today's world is characterized by challenges such as digitalization, technological advancements, and sustainable development. Multinational businesses and their (institutional) stakeholders need effective business law and taxation rules and practices so that they can adapt to these changes and challenges and provide long-term and sustainable solutions. Our research goes beyond the law and embraces a comparative and interdisciplinary approach, taking into account economics, organizational theory, finance, accounting, and other disciplines within the social sciences.

Applications

Our research aims to deepen not only the understanding of existing (international) business law and business taxation rules and practices, but also find and establish new and sustainable solutions that businesses and their stakeholders need today. Our research program has three core areas that have both academic relevance and societal impact:

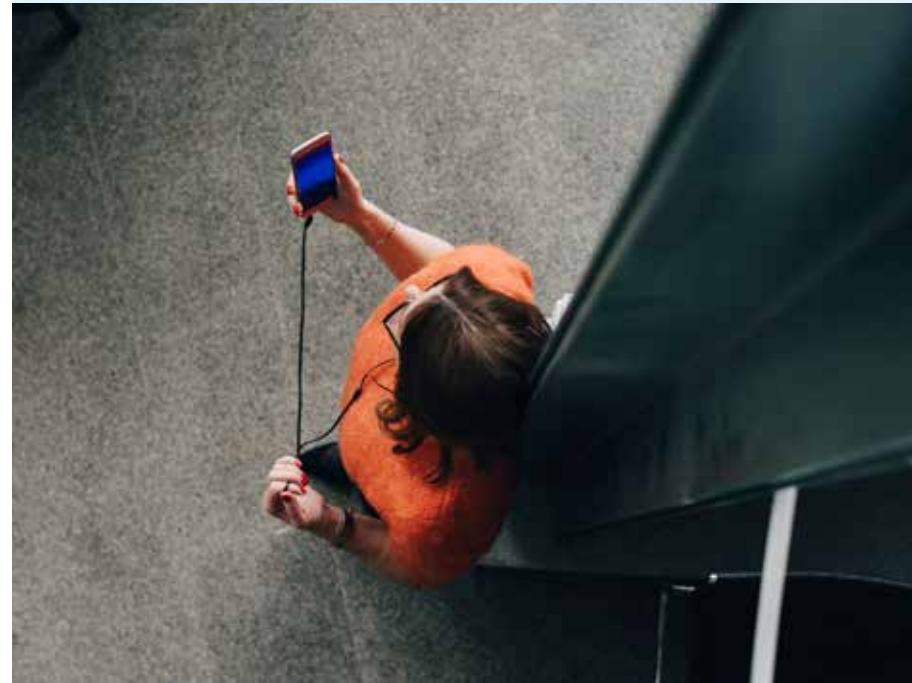
- we question how companies can structurally adapt to innovative challenges;
- investigate how modern (corporate) governance models such as platform and stakeholder governance models can be established and improved;
- assess which financial, tax and other instruments can be used to create sustainable and long-term focused companies.

Our latest research projects cover topics like:

- sustainable tax governance and sustainability engagement of corporate actors;
- the modernization of corporate and tax governance including the use of modern technologies and cooperative decentralized models;
- the sustainability of our pension system and the role of institutional investors;
- the influence of Big Data in business law and taxation.

Trends

Today's trends and challenges, such as corporate sustainability and the emergence of Big Data, are here to stay for the coming years. Our focus is on proposing sustainable policy recommendations and principles for regulating new business models and redesigning society's traditional legal concepts and practices.



Victimology, (in)justice, and Human Rights

contact: Nadia Banteka

Fundamentals

The study of victimology, (in)justice, and human rights transcends traditional disciplines and incorporates core perspectives from criminology, sociology, psychology, and law. It focuses on the legal position of victims in national, European, and global legal orders. It also examines certain groups of victims, such as children, victims of domestic and sexual violence, as well as victims of transnational and international crimes.

Applications

Our research focusses on three themes:

- ***Victim's experiences of justice***
The introduction of emotions in the just world theory; the expansion of the 'ideal victim' through gender studies, social psychology, and social movement theory; the development and use of theories of resilience and empowerment; the meaning of vulnerability.
- ***Victims in and around criminal justice***
Using data to improve our understanding of restorative justice and victim participation in criminal justice; questions of mutual recognition, the role of the European Court of Justice and the transposal and compliance deficits of the EU Victims' Directive; victim assistance in the Netherlands for victims of various crimes and levels of violence; secondary victimization and experiences such as stigmatization, or harsh judgment.
- ***'New' and 'old' victims***
Child victims, victims of traffic, victims of sexual abuse, victims of transnational crime, victims of terrorism, and victims of international crimes.

Trends

We identify three key trends:

- **Cultural victimology**

Victimization and the reaction to victimization are also products of culture. The exploration of victimization and reactions to victimization between cultures, and the victimology of cultural phenomena and cultural expressions such as art, film, literature, and music, as well as subcultures will gain prominence.

- **Green victimology**

Climate change and other environmental problems are of clear victimological relevance due to the large number of victims that these phenomena already claim and will claim in the future, and due to their geopolitical consequences in terms of migration, human rights violations, and war.

- **Cyber victimology**

The growing criminal activity that occurs in cyberspace fosters new forms of victimization but also forms of victim assistance. This poses new questions concerning the changing boundaries between private and public space, and the conception of the physical experience of victimization.

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**Tilburg School
of Social and
Behavioral Sciences**

TSB

Scientific Strengths

Brain and Cognition

contact: Jean Vroomen

Fundamentals

The goal of the program is to obtain a better understanding of the nature of human cognition and its neural basis. The program emphasizes theory development, attempts to base explanations for cognitive phenomena on neurobiological principles, and has a focus on using cognitive research to understand clinical findings. The research covers two subprograms: multisensory research, which focuses on how the human brain combines information from different modalities, like the ear and the eye, into a coherent representation of the world; and clinical neuropsychology, which focuses on neuroplasticity, recovery, and adaptive behavior of patients with brain malfunctioning. The two subprograms are highly integrated, and there is extensive collaboration across the subprograms.

Applications

Research has shown that many aspects of the brain can be altered (or are 'plastic') even through adulthood. The fundamental principle underlying neuroplasticity is based on the idea that individual synaptic connections are constantly being removed or recreated, largely dependent upon the activity of the neurons that bear them. This idea is gaining popularity as a theory because it explains poststroke improvements in functional outcomes with physical therapy. In our program, we examine patients who recover from brain tumor surgery and whether rehabilitation techniques, like physical therapy, can indeed induce plastic changes in neurocognitive functioning.

Trends

Techniques that enable people to obtain information about their brain and heart function and to use this proactively to improve health are becoming widely available. Doctors can then individualize treatment and interventions. One intervention is software offering biofeedback for both brain and heart. For nervous system balance, heart rate variability training might be recommended. For brain function improvement, normalizing brain patterns via EEG biofeedback, also known as neurofeedback, could be targeted to normalize neuron firing patterns.

Inter- and Intra-Organizational Forms of Cooperation, Dynamic Relational Perspectives on Adaptive Organizations

contact: Marius Meeus and John Bechara

Fundamentals

Organization studies is a multidisciplinary field of research and education that blends disciplinary perspectives of organizational psychology, sociology, and economics, with management, policy studies, and public administration. Its primary focus is on how organizational structures, processes, and practices are formed and how these, in turn, shape social relations and create institutions that ultimately influence social actors' behaviors inside and outside organizations. The combination of these perspectives enables a more full-fledged

account of organizational phenomena and challenges, relative to disciplinary perspectives. Most organizational challenges can be considered as dynamic, multilevel phenomena. After all, employees are members of teams/departments that are both part of organizations, which in turn are part of an industry. Every multilevel organizational phenomenon requires insights in psychological, sociological as well as economic explanatory mechanisms, research methods and data.

Applications

Our research specializes in organizational adaptiveness, using a multidisciplinary lens informed by relational, multilevel, and dynamic perspectives. Organizations are increasingly turning away from hierarchical forms of organization and are instead experimenting with a large variety of new temporary and network-based organizational forms such as:

- in/outsourcing
- open innovation
- public-private partnerships in R&D
- temporary organizations also called inter-organizational projects
- creative teams in mechanistic organizations
- collective synergy in and between teams
- social entrepreneurship and wicked social problems

The aim of the research program is to understand the causes and consequences of organizational adaptiveness by examining how organizations (need to) organize themselves, internally

and externally, to accomplish the required adaptations, such as innovation, learning from past performance, balancing with diversity, and adopting distinct temporal perspectives.

Trends

Our research topic – the relation between organizational adaptiveness and its intra- and inter-organizational relationships – is motivated by an ongoing and even accelerating development from a post-industrial society to a network-based society that requires aligned changes at the micro (team), meso (organization-market), and macro levels (institution, society). The rationale for our focus on organizational adaptiveness is that organizational boundaries have become more permeable, whereas organizational goals and tasks are increasingly multidimensional, dynamic, and complex.

Social Cohesion and Trust

contact: Peter Achterberg

Fundamentals

Changes in social behavior and cultural values are studied within the context of two perspectives: social cohesion and social stratification. Whereas the first perspective deals with the question of what binds people, the second perspective deals with socioeconomic differences. Overall, we study how processes of (post)modernization affect changes in societies and the individuals living in them. The question is how people individually and collectively adapt to personal failures and successes in an ever-changing world. Within our research, we use a comparative perspective to find out how societies are changing, how societies are increasingly different or similar, and how people may differ in their reactions to these changes.

Applications

From the perspective of social stratification, we study social phenomena such as labor, occupational specialization, income inequality, poverty, welfare and policy, and health. In the context of social stratification, we study themes such as culture, religion, values, solidarity, family, social networks and trust.

Trends

Processes such as individualization, globalization, digitalization, and rationalization have a profound impact on social life. In the coming years, we will continue to study how these processes affect the lives of people, their socioeconomic positions, their values and their behavior. While traditional data sources (i.e. survey research) remain an important feature of sociological research, new, Big Data sources (i.e. content and network data retrieved from social media; data gathered by municipalities and governments, etc.) will strongly reform how sociologists verify their theories.

Social Decision-Making

contact: Ilja van Beest

Fundamentals

Within the field of social psychology, we contribute to research on social decision-making in social, organizational, and economic contexts. We seek to understand how the actual, imagined or implied presence of others affects the behavior, associated cognitions, and emotions of people. Our research program aligns with the goal of the Herbert Simon Research Institute to increase well-being and adaptiveness in humans, and the goal of Tilburg University to understand society.

Psychology, Health, and Well-Being

Applications

Key examples of research into social decision-making, include the study of belonging, morality, emotions, and financial decisions. Research on belonging examines how people join forces, form coalitions, and include as well as exclude others to obtain desired goals. This research is concerned with the perspective of those that make the decision to include and exclude, but also the perspective of those that are affected. Research on morality studies how sets of beliefs are related and shape attitudes about institutions as well as pro-social behavior like trust. Research on emotion and financial decisions explores how emotions guide behavior and help people make smart financial decisions in the present (tax payments) but also for the future (retirement).

Trends

Due to globalization people's lives are progressively more connected. People are increasingly aware that their actions not only impact their close others, but also distant others. As a result, research on social decision-making has moved more in the direction of large-scale, cross-cultural comparisons to discover how interdependence will shape people's cognition, emotions, and behavior. Our new online-lab allows us studying these trends using larger samples. Another trend is that physiological measurements have becoming more readily available to the general public. Many people have phones or other wearables that allow online physiological measurements, which expanded the traditional experimental toolbox of social decision-making relying on self-reported measures. Our lab invested in non-invasive measurements of physiology to assess physiological correlates of social decision-making.

contact: Nina Kupper

Fundamentals

The psychology of health and well-being is a multidisciplinary specialized discipline that focuses on how biological, psychological, behavioral, and social factors influence health, disease, and well-being. The integrative approach of the biopsychosocial model revolves around the role of socioeconomic, psychological, biological, and behavioral factors at multiple stages of the disease process. These factors include the early detection and prevention of somatic and mental disease, illness determinants and risk moderators, identification of high-risk groups, behavioral and biological mechanisms, evidence-based interventions, and personalized healthcare. The integrative approach always considers these factors in relation to unique patient characteristics.

Applications

Our research aims to understand the interactions of the mind and body across the lifespan, to achieve optimal health and healthcare for patients with chronic medical or psychological conditions.

To accomplish this, we perform the full spectrum of research, from fundamental mechanistic studies to clinical implementation research in the following areas:

- ***Determinants/moderators of chronic diseases and mental health***
This theme focuses on how chronic somatic and mental disease can be better prevented, treated, and managed by taking into account psychosocial determinants and moderators of disease including personality, sociodemographic diversity, and distress.
- ***Personalized prevention & treatment***
This theme revolves around how to individualize (preventive) care and make healthcare diversity competent, taking individual differences in demographic and psychosocial patient characteristics into account.
- ***Biopsychosocial mechanisms of disease***
Within this theme, we aim to understand how biological, behavioral, and psychological processes interact to influence the etiology and progression of mental and somatic disease.
- ***Effective interventions***
This theme aims to show how the risk associated with biopsychosocial factors can be modified in novel interventions (therapy, e-health, m-health).
- ***Quality of Life and Well-Being***
We study the impact of disease and treatment on daily life, including quality of life.

Trends

Our research program builds on the current shift from viewing health as the absence of disease (with an accompanying focus on prevention and treatment) to a broader definition that also encompasses the ability to adapt and self-manage in the face of challenges, including patient-centered outcomes (i.e. quality of life, participation). This stimulates a multidisciplinary and integrative approach to healthcare. Gaps in current scientific knowledge concerning the mechanisms underlying health-relevant behavior change will be addressed by our research, which will promote the effectiveness of psychosocial interventions. By developing and fine-tuning interventional elements derived from mechanistic pathways relating psychosocial vulnerabilities to disease outcomes, our research will lead to treatments that will become more effective, patient-tailored, and advance overall health and well-being.

Individual Differences and Development

contact: Theo Klimstra

Fundamentals

Human development is a lifelong process. Changes in specific life stages are better understood in the context of our development during other life stages. Human development research benefits from comparing typical and atypical trajectories. It requires a development-contextual perspective in which changes in individual characteristics, social relations, and their interactions are studied in the context of broader societal phenomena.

Applications

Our research focuses on three areas:

- **Personality and Social Relationships**
We study individual differences and try to understand why people are who they are, how they choose their life paths, and why some flourish and others struggle. For example, we aim to find ways to get the best out of everyone by developing personalized (online) interventions, and to understand individual uniqueness through analyzing personality change, identity formation processes, and family-specific parenting dynamics.
- **Forensic Healthcare and Assessment**
In collaboration with healthcare institutions, we develop risk assessment instruments to stimulate personal development by assessing the effectiveness of interventions, such as Virtual Reality and inhibition therapy in various forensic populations.
- **Aging**
We investigate behavioral and neuronal correlates of individual differences in cognitive functioning to develop intervention programs that allow older adults to maintain or increase their cognitive functioning and positively contribute to successful aging. Furthermore, we also investigate potential predictors of individual differences in mastering challenging transitions in later adulthood, such as retirement.

Trends

There is a growing realization that every individual is unique and that psychological interventions, teaching strategies, and parenting practices can have very different effects on different individuals and families. Our research informs current trends which acknowledge that one-size-does-not-fit-all, as we assess individual differences in patterns of development for personality, antisocial behavior, identity, memory and cognition, emotions, and social relationships, and how these patterns are affected by interventions, life events, and other contextual factors. In line with the current emphasis on the importance of lifelong learning, our research employs a lifespan developmental perspective as we study developmental change and stability in all age groups.



Organization and Effectiveness of the Healthcare and Well-Being Sector

contact: len van de Goor

Fundamentals

In the field of healthcare and well-being, three sources of knowledge are crucial to understand, explain, and enhance what is needed to improve their effectiveness and quality. These sources are: scientific knowledge, professional expertise, and patients' and clients' needs. The integration of these sources, contributes to building robust evidence for the enhancement of care, treatment, and prevention. Generating and exchanging knowledge in co-creation with the healthcare and well-being fields substantially increases the value and impact of such knowledge to society. Sustainable knowledge with a strong focus on meaning and impact for the practice and policy of the fields of healthcare and well-being is generated by integrating theoretical knowledge with practical innovation, development and piloting, implementation, and evaluation.

Applications

We realize our research in collaboration with societal partners. Researchers, professionals from policy and practice, as well as patients and clients, structurally work together in studies intended to generate knowledge on important issues in healthcare and well-being. The main topics are:

- social and technological innovation in health(care) and how clients' needs and perspectives can be integrated throughout the entire process;
- recovery processes, addiction, stigma, and rehabilitation of people with chronic psychiatric problems;
- vulnerability, empowerment and resilience, social inequality, and how people are affected by influences from the social and physical environment, such as poverty and social deprivation;
- care, participation, and inclusion for people living with a mental disability, socially deprived people, people with difficulties entering the labor market;
- care chains and care networks in primary care and hospitals;
- integrating the clients' perspective in care for the elderly;
- the health(care) system, costs, policy, and system changes;
- accessibility and quality of care and prevention for children and youth.

Trends

(Health) care costs are rising due to sociodemographic changes and the increase in chronic diseases. In addition, the big gap in healthy life expectancy between groups with high and low economic status is not decreasing, despite significant efforts. Next to that reforms in the social system and (health) care system within the past decade will influence people's health and well-being and the provision of care substantially. We study, in direct collaboration with practitioners and clients, how these trends influence people's health and wellbeing and how innovative, social and technological developments in (health) care are related to quality of life and quality of care. Important perspectives taken into account are social inequity, social deprivation and inclusiveness, vulnerability and resilience, organization and accessibility of care, recovery and rehabilitation processes, and incorporating clients' life styles and perceptions.

Performance, Development and Well-being at Work

contact: Rob Poell

Fundamentals

Human Resource Studies focuses on the employment relationship. In this exchange relationship, elements for exchange (labor, reward, voice, development, etc.) are subject to various contexts in the workplace (psychological, transactional/business, and legal/societal). At the individual level, Human Resource Studies focus on the exchange between worker and organization, at the organizational level on the various HR practices (e.g., recruiting, rewarding, training, job design, participation) and at the societal level on topics such as social welfare, employability, inclusion, and the future of work.

Applications

Our research focuses on four themes:

- ***Aligning strategic HRM, well-being and performance***
In this theme, the core issue is how organizations can jointly optimize organizational performance and worker well-being (e.g. health, happiness, social relations, justice, sustainability, and well-being), through the implementation of HRM policies and practices.
- ***Enhancing worker health and well-being over the lifespan***
In this theme, the core issue is how organizations can help individual workers to self-regulate and adapt to (changing) situational (e.g. work contexts and demands) and personal (e.g. life events) circumstances to age successfully at work.
- ***Learning, development, and the strength-based approach***
In this theme, the core issue is how organizations can optimally identify, deploy, and develop the strengths, knowledge, skills, and attitudes of workers, and which different strategies workers can use to stimulate their own development.
- ***Inclusive HRM***
In this theme, the core issue is how organizations can create inclusive workplaces where all vulnerable (potential) workers are valued and their interests taken into account, such as minorities, people with reduced work capacity, currently unemployed, precarious workers, refugees, and people on flexible employment relationships (including the self-employed).

Trends

With the ongoing blurring of organizational boundaries, we see a replacement of the traditional employment relationship by a variety of arrangements through which work is carried out, such as in- and outsourcing, contract workers, the gig economy, and so forth. Automation, robotization, and digitalization are also causing rigorous changes in how work is carried out and managed. These trends imply a redesign with respect to topics such as performance management, participation/co-determination, individual/team/organizational learning, and HR governance, which are included in the four themes. Ultimately, our research aims to establish the effects of such trends on performance, development, and well-being.

Modern Research Methodology and Applied Statistics for the Social and Behavioral Sciences

contact: Jelte Wicherts

Fundamentals

The proper collection and analysis of data is fundamental to learning, and to research in general. How to collect data in such a manner that learning can occur is a question that lies at the core of research methodology. Applied statistics examines how data can be analyzed in a way that allows valid and reproducible answers to be given to the research questions. To keep up with new types of available data and evolving research questions, we need modern research methodology and statistical tools. Current examples are data resulting from wearable devices, high-throughput experimentation, or naturally occurring data (e.g. based on social media). These novel data give rise to novel research questions, such as the development of personalized and dynamic treatment regimens for health and well-being.

Applications

Our research in the field of Methodology and Statistics aims to develop, refine, and disseminate advanced methods for collecting, interpreting, and analyzing quantitative data. We focus on latent variable models of individual differences (structural equation models, factor analysis, latent class and finite mixture models, item response models), survey methodology (response styles, sampling, norming, missing data imputation), computational statistics (Bayesian statistics, high-dimensional data), and meta-research (publication bias, meta-analysis, statistical decision-making). Some examples of applications are:

- meta-research (the study of how scientists perform their research), which is crucial for improving research practices;
- trustworthiness of science (meta-science);
- survey methodology;
- data collection via experience sampling;
- cluster analysis using mixture models;
- missing data imputation;
- statistical analysis of Big Data and streaming data;
- network psychometrics;
- analysis of longitudinal data including event history and network event data.

Trends

Many societies are in the middle of a data science revolution with data being collected and analyzed on a large scale in the hope of creating value from it. This poses challenges for research methodology and statistics. In the coming years, the following challenges, in particular, are interesting for our research group:

- meta-research;
- research methodology for wearable devices (e.g., experience sampling);
- analysis of naturally occurring data;
- personalized health and well-being;
- analysis of cross-disciplinary data.

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Tilburg School
of Humanities
and Digital Sciences

TSHD

Scientific Strengths

Language, Communication and Cognition

contact: Emiel Kraemer and Juliette Schaafsma

Fundamentals

Communication is essential in both social and organizational settings. We need communication, for example, to exchange information with our conversation partners, or to persuade them (not) to do something. Language is a crucial cognitive skill in this process: We use language in our face-to-face interactions and support it by appropriate non-verbal behaviors such as facial expressions and gestures. We call on language when we engage in a broad range of computer-mediated interactions, and increasingly also for human-machine interactions. Language and digital media, both separate and in interaction, therefore, play a vital role in the various communicative processes that feature in our contemporary society.

How do these communicative processes work? How do we express and process information in different modalities, ranging from speech and gesture to text, (moving) image, and digital cue systems, such as emoji or “like” buttons? How does our brain process such complex communicative signals? What makes a good communicator, and why do some communication styles match certain contexts better than others? How does face-to-face communication differ from computer-mediated communication? Can we design new digital tools to support deficiencies in communication or to empower patients in health communication, and how can we evaluate whether such tools are actually useful and usable? Can we teach advanced communication skills to the robots that are entering our society? What impact does this have, on individual users and organizations, and society as a whole?

Applications

The Language, Communication and Cognition program provides answers to the above questions, by exploring cognitive and social aspects of human communication through a multi-method approach. This combines carefully designed experiments with survey methods, corpus analyses, computational modeling, and digital ethnographic methods. Core research domains include communication and technology, cross-cultural communication, business communication, new media design, information visualization, language production and understanding, and non-verbal communication.

Applications of our research can be found in areas such as eHealth and data science, affective computing, media and journalism, and education. We frequently collaborate with commercial, non-profit and governmental organizations in externally funded projects (NWO, H2o2o, ERC, and the Taskforce for Applied Research (NPRO-SIA)).

Trends

An important trend is the increased use of communication technologies and artificial intelligence to improve interactions between people, and with computers. Important manifestations are voice interfaces, chatbots, and (social) robots; we address how these should be designed, how these should be applied in practical settings, and how their success can be measured and evaluated. A second important trend concerns personalization: how to set up communication strategies and tools, which are targeted to individual addressees, to improve the effectiveness of the communication.

Cognitive Science and Artificial Intelligence

contact: Max Louwerse and Eric Postma

Fundamentals

The interdisciplinary field of cognitive science and artificial intelligence investigates the human brain, mind, and behavior from the perspective of computational neural networks, artificial minds, and computer simulations. This interdisciplinary field draws on disciplines such as psychology, linguistics, neuroscience, computers science, data science, and engineering. Cognitive science aims to incorporate multiple disciplines with the aim of building artificial intelligence models based on these disciplines. The research of the Department of Cognitive Science & Artificial Intelligence focuses on the cognitive sciences and artificial intelligence, combining the measuring of mental and behavioral processing, the modelling of these processes in computational models, the

testing of these computational models with experiments, and the development of artificial intelligence algorithms. The Department is heavily involved in the Jheronimus Academy of Data Science (www.jads.nl), the DAF Technology Lab (<https://www.tilburguniversity.edu/campus/experiencing-virtual-reality/>) as well as in MindLabs (www.mind-labs.eu).

The combination of cognitive and artificial intelligence perspectives contributes to the integration of the use of interactive technologies, including AI and data science in society. At the heart of many innovations are so-called *narrow* AI systems that outperform humans on specialized tasks, while lacking common sense. This ‘barrier of meaning’ that is hard to overcome for AI systems, requires a delicate balance of the task division between the computer and human expert. Finding this balance requires the combining of expertise from natural and artificial intelligence. At the same time, understanding the human brain, mind, and behavior combined with computational models provides an impetus to fields as diverse as linguistics, cognitive and social psychology, computer science, engineering, education, and artificial intelligence.

Applications

The research topics addressed by the group are wide and varied, and are all related to aspects of cognitive science and artificial intelligence. Our research is both fundamental and applied. Below, we list some of our research topics and examples of typical applications.

- **Computational linguistics:** extracting meaning from spoken and written language
- **Image recognition:** detecting and tracking pedestrians, art analysis, face recognition
- **Affective computing:** recognition of facial, vocal, and gestural expressions
- **Robotics:** brain-controlled robots, robots to facilitate second-language learning
- **Network analysis:** identifying anomalies in social networks
- **Decision-making:** software to support decision-making in uncertainty
- **Cognitive modeling:** furthering our understanding of how humans acquire language
- **Virtual, mixed, and augmented reality:** avatars and virtual environments for training purposes
- **Cognitive psychology:** measuring human behavior using EEG, EMG, ECG, and eye tracking

Trends

The emergence of advanced machine learning technology in data science and artificial intelligence, especially deep learning, opens up a plethora of possibilities for a wide variety of application domains. In the digital society, communication of humans with computing devices, avatars, and robots will become easier, the automatic analyses of documents, images, videos, and sounds will become commonplace, and virtual worlds will become truly interactive. Our mission is to study human cognition and artificial intelligence, to understand their possibilities and limitations, and to develop novel insights and applications to support the transition to the digital society. Moreover, technological advancements increasingly come from the interaction between technology and human behavior. Our mission is not only to develop technologies and measure human cognition, but to create a symbiotic relationship between the two.

Cultural Dynamics in a Super-diverse, Globalized, Digital Society: Online Culture

contact: Ad Backus

Fundamentals

Globalization and digitalization have transformed the world around us and will continue to do so in the foreseeable future. One consequence is that our societies harbor people from an enormous variety of geographical, regional, and social backgrounds. Another is that they all lead very different lives, with an increasing portion of it lived online. Digital communication and information gathering have become integral parts of human sociality. The disciplines that study human culture, such as anthropology and culture studies, attempt to describe the effects of globalization and digitalization on how we live our everyday lives, and account for the resulting societal and cultural changes.

Applications

We study selected aspects of online culture to improve our understanding of the social world and generate knowledge that can be used to help people navigate their globalized and digitalized environments. Generally speaking, we focus on how communication patterns are affected by the online medium and its global reach, how identities are constructed and presented online and in a global setting, and how debate and discussion in the public sphere is affected by social media and the information flows on the Internet. We do this by:

- Fostering an interdisciplinary research culture in which these topics are studied from various disciplines, and the theories and the methods typical of these disciplines are quite naturally compared and integrated;
- Finding specific topics for individual research projects that lend themselves to knowledge utilization in a natural way, such as the integration of online and offline behavior, the emergence of conspiracy thinking, fake news and echo chambers, the role of socialization and education, the emergence of hybrid cultural and linguistic expressions and hybrid identities, and the digitalization of heritage;
- Embedding ourselves in international research networks to ensure possibilities for international comparisons and for accounts of the phenomena that transcend domestic concerns.

Trends

In the coming years, we foresee an increasing integration of cultural, anthropological, sociological, philosophical, and linguistic perspectives, to arrive at ever more inclusive accounts of how globalization and digitalization affect us. This will lead to:

- an increasing role in policy advice on social cohesion, education, migration, diversity, et cetera;
- BA and MA programs that increasingly balance these perspectives and educate a new generation of policymakers, educators, civil servants, journalists, et cetera, who fully benefit from an interdisciplinary training;
- the development of a genuinely interdisciplinary theory of the cultural impact of globalization and digitalization.

Philosophy of Science Ethics, Philosophy of Moral Agency, Philosophy of Humanity and Society

contact: Wim Dubbink, Maureen Sie, and Martine Prange

Fundamentals

In our program, we investigate contemporary societal questions such as ‘what is the meaning of love?’ ‘what are the limits of free speech?’ and ‘what is moral responsibility?’ focusing on human cognition, agency and reasoning. We do this in theoretical, practical and applied ways to generate and improve the philosophical, political and moral views and arguments necessary to achieve a more resilient society and a better understanding of what a resilient society looks like.

Applications

We focus on issues in contemporary practical and theoretical philosophy, with an eye to their relevance for the disciplines of economics, law, social and behavioral sciences, psychology, the humanities, and to society more broadly. Our research often has direct societal relevance and contributes to the body of knowledge and understanding required by societal organizations (businesses, government, policymakers, and NGOs) as well as other disciplines (such as statistics, economics, cognitive science, social psychology, psychiatry, and law). Many of our researchers work together with scientific and societal partners locally, nationally, and internationally, investigating diverse topics such as equality in sports, the scientific production of knowledge, and the role of moral sentiments in moral reasoning and public life. They also regularly contribute to public debates sparked off by scientific research or political developments on topics such as nudging, implicit biases, free will and moral responsibility, and fake news.

Trends

With the current international philosophical, technological and socio-political developments, the role of our research will grow. We expect our research to yield important and interesting results for themes such as artificial intelligence, public health, and immigration.

It will also contribute to contemporary challenges such as:

- how to create a resilient society;
- the impact of populism;
- the digitalization of our society;
- and developing a more sustainable way of life.

Understanding these challenges and our personal and institutional responsibilities vis-à-vis these challenges is crucial for the future of our society.

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Tilburg School of
Catholic Theology

TST

Scientific Strengths

The Transformation of Catholicism in Late Modernity

contact: Dr. Karim Schelkens

Fundamentals

The classic view of secularization theories, which predicted the disappearance of religiosity in the West, no longer holds as international statistics (cf. Pew Research Institute) demonstrate that religious affiliation is expected to grow rather than decline towards 2050. Since traditional theories are no longer valid, new models are needed to adequately understand the translocation of religious practices, beliefs, spirituality, and theological thought models.

Research conducted in the program 'The Transformation of Catholicism in Late Modernity' focuses on religious change in present-day Western societies. Scholars from a variety of disciplines (theology, psychology, sociology, church history,

etc.) aim to understand the transformation of contemporary Catholicism and the underlying causes of this transformation in the contemporary Western world. They examine how social and societal changes in the late modern period transformed institutionalized religion, while simultaneously giving rise to new forms of (Catholic) religiosity and spirituality and new forms of pastoral practice.

Applications

Our research demonstrates *that* religiosity in the West is shifting and documents *how* this happens. The media and policymakers deal with religion every day, but often still use categories and approaches that are no longer helpful for understanding religiosity. Our research therefore offers tools for:

- Understanding the **translocation** of religiosity: from the perspectives of pastoral, empirical, and sociological research a framework of understanding is developed that focuses on the **liquidity** of religion, offering methods to comprehend how it has become liquid and has moved beyond traditional confines.
- Comprehending that religion has become **migratory**: the traditional 'offer' and appearance of the churches between 1800 and 1960 did, in fact, become less visible, but research shows that religion has become de-institutionalized rather than disappeared. Policymakers and the media need to be trained in moving beyond the idea of **religion and**

modernity being opposing forces and instead focus on an understanding of *the modernity of religion*.

- Understanding how religion has become subject to *internal* and *external* diversification, and the *occasional* character of religious practice by offering contemporary evaluations of new phenomena such as religious youth gatherings as well as debates on religious presence in the public sphere, in the media, in care provision, and in education.

Trends

In general, the research aims to offer a deeper understanding of the relationship between religion and societal evolutions by:

- examining the position of religion in the filter bubbles of social media and the digital world;
- interdisciplinary investigations of the effect of migration on Western society and on the rise of religiosity;
- studying the need for spiritual guidance within the secular atmosphere;
- research into the rediscovery of Christian wisdom as a life-orientating tradition.

Initiation and Mystagogy in the Christian Tradition

Prof. Marcel Poorthuis

Fundamentals

This research program studies the methods and practices of the Christian tradition that may transform a person's way of life, inner experience and, consequently, their openness to the mystery of God. The program therefore focusses on the personal transformation processes that occur when individuals seek to join a Christian Church and the Catholic Church in particular. By focusing on such transformation processes, Tilburg School of Catholic Theology fills a gap in international theological research. Some of the research program's themes are investigated at active research centers such as the Center for Patristic Research (since 2019 Centre for the Study of Early Christianity) and the Thomas Institute, which build on active collaborations with other universities.

Applications

The program aims to deepen our understanding of the processes through which Christians appropriate their faith, both in the single moment of initiation as in ongoing processes of transformation. Our researchers therefore study these processes within the wide range of authoritative texts and theological and pedagogical concepts that underlie processes of transformation, as well as the people, communities, and social contexts that experience and contribute to them.

Our research focusses on:

- the significance of initiation and mystagogy in the Bible and in the Christian tradition;
- the role afforded to rituals and authoritative texts in the process of initiation and transformation;
- the role of the faith community through the ages.

Trends

- Concentrating upon sources, which bring together Biblical studies (Hebrew and Greek), Church history, Jewish studies, interreligious dialogue, and liturgy to study mystagogy.
- Analyzing the theological, philosophical, liturgical, and pedagogical aspects of initiation and mystagogy in the writings of the Church Fathers and Thomas Aquinas.
- In the future, the concept of mystagogy will be broadened to the concept of *paideia*. This Greek word for education is an umbrella term for all kinds of learning in antiquity. The relationship between teacher and pupil, the importance

of transmission of culture to new generations, and the different pedagogical strategies of learning in Judaism, Early Christianity, and the Hellenistic cultural context will come to the fore. This concept is closely related to *Bildung*. In this respect, *Bildung* is not only relevant for theology but is of the highest relevance for our university at large.

N.B. Both programs focus on transformation processes: of persons and of institutions. Tilburg School of Catholic Theology has several research institutes with specific perspectives, and the members of these institutes contribute to the research programs from these different perspectives.

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Scientific Strengths

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