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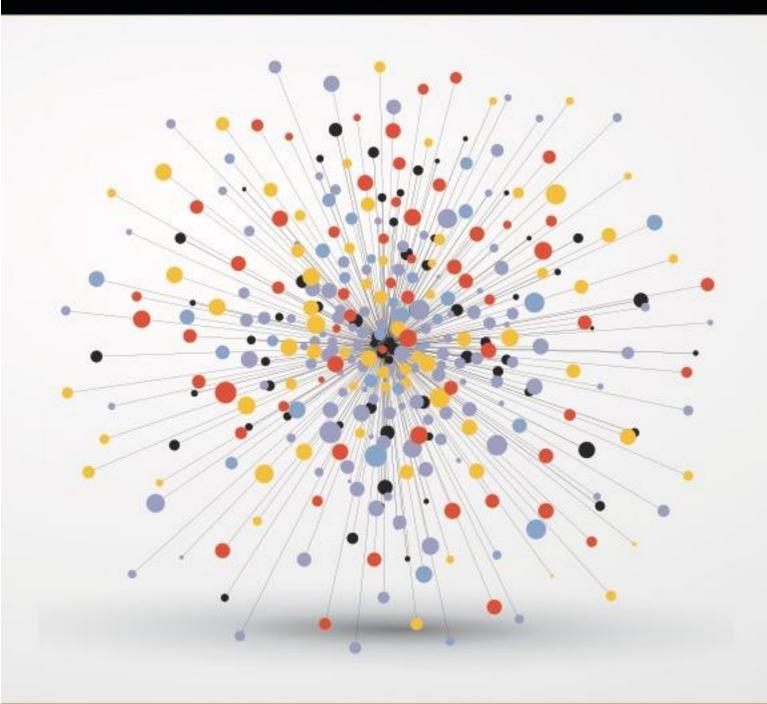
European
Commission

Research on Diversity & Diversity in Frontier Research

Conference Summary Report

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Welcome speech by European Commissioner for Equality, Helena Dalli

Commissioner Helena Dalli opened the conference by highlighting the European Commission's strides in promoting gender equality and inclusion in research and innovation. Citing Horizon Europe's gender equality provisions as a significant step forward, she stressed the importance of fair working conditions and inclusive research environments. She also discussed the need for ensuring an inclusive approach to research design and encouraged researchers to consider the intersectional discrimination faced by many marginalised individuals. Research that explores the link between gender and other diversity characteristics, such as ethnicity or disability, is very valuable and much needed both for European citizens and for policymakers who need to develop evidence-based policy. Recognising the value of diverse research teams, Commissioner Dalli also called for making research careers more attractive and sustainable for all. In conclusion, she underscored the need for equality to drive long-term excellence in European research and expressed gratitude for the collective efforts in advancing the Union of Equality.

Introduction by ERC President Maria Leptin

In her welcoming address at the ERC Conference on Research on 'Diversity & Diversity in Frontier Research', the President of the European Research Council, Maria Leptin, expressed gratitude to Commissioner Helena Dalli for insights into the European Commission's work on promoting diversity, inclusion, and equality. She underscored the broader context of diversity within the European framework, emphasising research's role in understanding and providing solutions to the challenges and opportunities linked to promoting diversity, inclusion, and equality.

Maria Leptin emphasised the importance of diversity for conducting research, going beyond equal access to incorporating various perspectives throughout the research process. A diverse research community fosters a more comprehensive understanding of complex issues, promotes creativity and innovation, and facilitates interdisciplinary collaboration.

She stressed that the ERC is committed to promoting diversity, with a focus on ensuring transparency, objectivity, and reducing biases in its peer review system. Efforts to achieve gender balance, geographical diversity, and inclusivity for evaluators with disabilities were outlined. The ERC actively encourages applications from researchers worldwide, across all career stages, and addresses potential barriers for underrepresented groups. The ERC Scientific Council's dedication to considering diversity seriously in its pursuit of scientific excellence was assured.

Maria Leptin mentioned the upcoming proposal for FP10 in mid-2025 and emphasised the importance of the scientific community's support for a higher budget to safeguard continued funding for fundamental research.

Maria Leptin concluded with anticipation for the presentations from the invited speakers, expressing curiosity about how diversity is addressed across various scientific fields and encouraging discussions on shared considerations and field-specific approaches to diversity in research. She ended her welcome speech by asserting that the ERC remains committed to promoting diversity as a key element of scientific excellence within the European research landscape.

Keynote - The Female Turn: How evolutionary science shifted perceptions about females.

Malin Ah-King, Associate Professor at the Department of Ethnology, History of Religions and Gender Studies, Stockholm University (Sweden)

Malin Ah-King's keynote presented her book *The Female Turn, How Evolutionary Science Shifted Perceptions about Females*, describing the history of evolutionary biology from a gender perspective, particularly the field of sexual selection. The prevailing assumption within evolutionary science has historically been that females are passive and coy, and primarily mating with one male. However, there has been a shift away from traditional notions of females, which Prof. Ah-king calls a female turn, within the international research community of evolutionary biologists recognising that female animals can have active sexual strategies, initiate mating, be fiercely aggressive and frequently mate with multiple males.

Prof. Ah-King's science study is based in the tradition of feminist science studies, that have challenged the notion of objectivity in natural sciences, claiming that the scientific endeavour is not an apolitical, value-neutral, and objective process. Rather, all knowledge is partial, context-dependent and based in lived experience. From the interdisciplinary perspective of evolutionary biology and gender studies, Prof. Ah-King studied how and why this female turn occurred. While Darwin's description of females as passive in his theories on natural and sexual selection greatly impacted subsequent evolutionary research, early beginnings of a female turn can be found in Primatology in the 1960/70s, as an effect of pioneering feminist researchers starting to question the assumptions of females as coy. Subsequently, perceptions of females also changed and became more nuanced in other fields such as ornithology, snake, frog, and spider research.

Prof. Ah-King described how her theoretical starting points, namely epistemology of ignorance and situated knowledges, offer analytical lenses to understand the dynamics of knowledge production within the scientific community.

Epistemology of ignorance entails studying how knowledge is ignored, delayed or forgotten and recognising that ignorance is often not merely the absence of knowledge but an outcome of cultural and political struggles. Studying the researchers' situated knowledges entail analysing how their specific ways of seeing are formed by their theoretical perspective, methodology, study species and lived experiences.

Combining the two perspectives means recognising that also ignorance is situated and entails asking questions such as: what prevented/prevents some scientists from engaging with female agency, and what spurred other scientists to see females as active?

Prof. Ah-King showed that ignorance about females in evolutionary biology has been produced in different ways – by research repeatedly taking point of departure in male-centric investigations and/or explanations and subsequently including female-centric equivalents (male precedence); undermining the authority of certain knowers (for example western primatologists not citing Japanese primatologists on the basis of their methodology), and a widely recognised citation hierarchy/taxonomic ignorance in which bird research is most highly cited in the field. On the other hand, the recognition that females can be sexually active came about due to interventions by feminist biologists; due to certain methodologies rendering new insights; knowledge coming from other fields, technical innovations or through studying certain animals, and not least impacted by the socio-political context of the feminist/sexual revolution.

While progress has been made in terms of nuancing the predominant understanding of females as coy, the female turn in evolutionary biology is still an ongoing process. Knowledge about sexual selection is still hindered by the assumption that it is weaker or non-existent in females. Likewise, the predominant definition of sexual selection excludes many ways in which females compete for reproduction. It is also often harder to study sexual selection in females or the methodology to study females has not yet been developed. Lastly, male precedence and androcentrism are still hindering knowledge production about females.

Summing up, while the inclusion of a plurality of perspectives as well as research on a diversity of species have broadened the understanding of sexual selection, and thereby made science better, there are still a number of hindrances for the development of a more comprehensive knowledge about sexual selection in females.

Session I: Diversity in Health Research

Pierre-Yves Geoffard is Professor of economics at the CNRS (France) and one of the four principal investigators of the ERC funded Synergy project '*GENDHI: Gender and Health Inequalities: from embodiment to health care cascade*'.

The project focuses on gender and health inequalities. It studies in particular the empirical association between socio-economic status and individual health by exploring gender health inequalities at both individual and aggregate levels. The projects' focus on gender stems from the fact that there are gender differences as concerns mortality and morbidity: women live longer than men, but in poorer health. There are also gender differences as concerns diagnoses: men tend to be underdiagnosed for depression for example, while women are underdiagnosed for several other diseases.

However, gender is not the only factor impacting health. Accordingly, the project applies an intersectional approach, aiming to disentangle not only biological but also several social factors, such as income, education, social class, wealth, etc., that drive gender differences in health.

The project combines multiple disciplines, such as sociology, epidemiology, demography, and economics and it adopts mixed methods, including longitudinal studies, interviews, participative observations, life course perspectives and analysis of quantitative data.

While initially focusing on cardiovascular diseases, cancer (specifically colorectal cancer), depression, and Alzheimer's, the project had to adapt due to the COVID-19 pandemic and also included the latter in their analysis.

In conclusion, Prof. Geoffard emphasised that employing an intersectional approach in analysing gender health disparities is crucial, allowing for a comprehensive understanding not only of gender and sex differences in health but also of the intricate interconnections between sex, gender, and various other social factors.

Maria Yazdanbakhsh is Professor in cellular immunology of parasitic infections at Leiden University (The Netherlands). She is the principal investigator of the ERC funded project REVERSE: Reversing vaccine hypo-responsiveness.

Prof. Yazdanbakhsh presented her research on the heterogeneity of the immune system and responses to vaccination across geographical areas.

She highlighted that research in immunology is mainly concentrated on the global north, particularly in affluent regions like the US, Europe, and Australia. This leads to a more limited

biomedical knowledge of the immune systems of the global south populations. The consequence is that vaccines developed in the global north, and tested primarily in affluent regions, face substantial challenges when deployed in low-income countries where they have a more limited effect.

Prof. Yazdanbakhsh presented some of her preliminary research results obtained through collaborative research with groups in Africa and Southeast Asia. Those results demonstrate that the immune system patterns between European and African populations show substantial variations. They also emphasise the need to consider for vaccine development not only the genetic diversity but also the environmental factors. Importantly, those environmental factors can be vastly diverse also within countries, for example between urban and rural areas. People living in urban areas in the global south may have more in common with people living in urban areas in the global north than with people living in rural areas within the same country. These factors are important to take into account when developing vaccines.

Prof. Yazdanbakhsh further developed various examples of differences in vaccine efficacy in various regions – such as the Ebola vaccine in Senegal versus the UK – and highlighted the pressing problem of vaccine effectiveness disparities. She emphasised that prevailing assumptions about vaccine failure attribute this to administration issues, while there is a biological basis for these disparities.

Prof. Yazdanbakhsh concluded by stressing the need for further research to understand the biology and pathways causing vaccine hyporesponsiveness. She also emphasised the critical need for addressing gender bias in immunology research and more generally employing a more comprehensive and inclusive approach in studying immunological profiles and vaccine responses. Studying different populations immunological profiles will provide us with a more complete picture of the immune system and will improve vaccinations and their effectiveness across geographical areas.

Charles Agyemang is Professor of global migration, ethnicity and health at Amsterdam University Medical Centers (The Netherlands). He is the principal investigator of the ERC funded project Pros-RODAM: Hypertension Susceptibility in African Migrants: Solving the puzzle through transcontinental prospective cohort study design.

Prof. Agyemang presented his research on ethnic inequalities in health and non-communicable diseases, more specifically on hypertension susceptibility in African migrants.

He addressed the significant changes in migration patterns over the past few decades, emphasising the considerable increase in the global migrant population, which reached approximately 281 million in 2020. While migration brings many advantages, such as contributing to better living standards, socioeconomic development, and substantial remittances, there are also health associated challenges. For example, issues related to mental health and infectious diseases tend to decrease with migration. However, this is accompanied by a shift towards cardiovascular diseases, diabetes and other non-communicable diseases. In particular, cardiovascular diseases are a major burden for migrants and were shown to rapidly increase upon settlement in the host countries, with hypertension being the single most important modifiable risk factor.

Prof. Agyemang explained that disparities in health outcomes among migrant populations are influenced by many different factors such as geographical origin, destination country, or duration of residence. The awareness of those various impacting factors results in a more correct and detailed understanding of migrant health. It also challenges the attributions of health issues solely to socioeconomic status, unhealthy diets, or genetics.

To illustrate those statements, Prof. Agyemang shared results, which compares the health of Ghanaian migrants in different European cities with those in rural and urban communities in Ghana. The preliminary findings reveal significant changes in hypertension rates and nutritional patterns, highlighting the impact of migration on health.

Professor Agyemang ongoing ERC-funded longitudinal study aims to provide unique insights to the interplay of genes, environment, and lifestyle changes. This contributes to a more nuanced understanding of health outcomes in migrant communities.

In conclusion, Prof. Agyemang's research on inequalities in health among migrant populations, particularly focusing on hypertension susceptibility, emphasises the challenges migrants face in maintaining health during and after migration. His research sheds light on the complex interplay of factors influencing health outcomes, underscoring the importance of ongoing research in gene-environment interactions and epigenetic modifications to address the nuanced health disparities within migrant communities.

Gian-Paolo Dotto is Professor at the University Hospital in Lausanne (Switzerland) and Director of the Laboratory of Skin Aging and Cancer Prevention Dermatology Department at the Massachusetts General Hospital and Harvard Medical School (United States). He is the principal investigator of the ERC funded project ECAP: Genetic/epigenetic basis of ethnic differences in cancer predisposition.

Professor Dotto presentation focused on the genetic and epigenetic basis of ethnic differences in cancer predisposition. His research mainly focuses on early stages of skin cancer development, in particular on the relationship between aging, sex differences, and ancestry. Professor Dotto's lab also focuses on sex hormones like androgen, which decrease with aging in both males and females.

Professor Dotto showed that there are differences in susceptibility and survival rates between persons with black and white skin (and variations in-between), particularly in squamous cancer affecting internal organs like the head and neck. His research includes a unique collection of foreskins from young boys of different ancestries, allowing for a comparison of genetic variability between black and white populations. The research suggests differences in stem cell potential and oncogenicity of primary keratinocytes from black versus white boys, due to the association of the gene HSD17B7.

Professor Dotto likewise showed that there are differences in how males and females are susceptible to cancer. Indeed, one of the biochemical functions of the gene HSD17B7 is also to determine activation level of the sex hormones oestrogens and androgens in peripheral tissues. These sex differences extend beyond survival rates and affect the immune response and the toxicity of cancer treatments. Females generally show higher susceptibility to the toxic effects of chemotherapy compared to males. This gender-related variation in cancer susceptibility and treatment response is a crucial topic in gender medicine. Historically, clinical trials were primarily conducted with male participants, leading to dosage optimisation that may not be suitable for females. Hence, as ancestry and societal factors, sex differences are crucial to consider in medical research and treatment.

In conclusion, Professor Dotto's research underscores the importance of considering ancestry, sex differences, and societal factors in understanding the genetic and epigenetic basis of disparities in cancer predisposition. His research reveals significant variations in susceptibility and survival rates between different populations and emphasises the necessity of accounting for these factors in medical research and treatment strategies.

Session 2: Diversity from a Technological and Legal Perspective

Louise Amoore is Professor of Political Geography at Durham University (UK), and principal investigator of the ERC funded project "Algorithmic Societies: Ethical Life in the Machine Learning Age".

Her research explores the ethical implications of living in a society heavily influenced by artificial intelligence. In this context, diversity emerges as a pivotal element in envisioning an ethical society within the AI era.

Prof. Amoore highlighted how diversity, beyond equality or inclusion, is a dynamic concept and practice. She referenced sociologist Sara Ahmed's study on diversity to highlight its complex role, noting that accommodating diversity in AI, or more generally, isn't a straightforward solution and can conceal other forms of exclusion and discrimination. In the context of machine learning, particularly generative AI, the meaning of diversity is being redefined, with a call to be vigilant about how machine learning models reshape thinking, research, and practices.

Prof. Amoore discussed how one of the challenges in generative AI is the so-called "foundation models", that is, large AI models trained on enormous quantities of unlabelled data through self-supervised learning. Foundation models, despite being a preference in the AI community, are criticised for potentially homogenising differences and inheriting biases. This was illustrated with the example of Joy Buolamwini's white mask experiment, highlighting the profound diversity problem rooted in biased training data used for facial recognition algorithms. Another example highlighted was a study on Rotterdam's use of AI in detecting welfare fraud, which revealed racialised and gendered assumptions in the decisions taken by the AI algorithm.

Prof. Amoore's presentation also highlighted the complexities of addressing diversity through synthetic data. In this case, AI itself is prompted to generate diversity (e.g. in facial images) rather than training it on actual real-life diversity. While training AI on diversity with synthetic data is claimed to resolve bias problems, Prof. Amoore raised concern about the efficacy of this approach, highlighting the potential pitfalls and the need to consider historical contexts and biases in decision-making about balanced data sets. This shift from a human-centric to a statistical concept of diversity raises serious ethical questions about standardisation and normalisation by machines.

In conclusion, Prof. Amoore urged a shift in perspective, suggesting that the impact of artificial intelligence on diversity goes beyond bias mitigation. She proposed a more profound consideration of AI's role in shaping new norms of diversity, calling for ambitious responses in terms of politics, ethics, and responsibility. She advocated for the humanities and social sciences to not only identify but actively shape alternative futures in the face of AI's impact on society.

Manuel Gomez Rodriguez is a tenured faculty at the Max Planck Institute for Software Systems (Germany). He is the principal investigator of the ERC funded project *HumanML: Human-Centric Machine Learning*.

Dr. Gomez Rodriguez discussed the role of artificial intelligence (AI) in decision making support systems across various high-stakes domains, such as health, science and education. He pointed towards the potential benefits of AI in assisting experts in making better decisions, but also raised concerns about the potential negative impact AI could have on decision making processes if not used sensibly, and about the potential for discrimination and bias.

Dr. Gomez Rodriguez illustrated the application of AI in decision support systems using examples such as medical diagnosis based on radiological images and the selection of job candidates from a pool of applicants. He emphasised that a typical safeguard when using AI to aide decision making is that the ultimate decision is in the end made by a human expert, who considers not only the model's output but also has access to additional information.

The central concern addressed was the importance of diversity in three key aspects: the "data subjects" (individuals being assessed), the decision-makers, and the AI models themselves. Diversity matters in relation to all of these three aspects because it can impact the quality of decisions. For example, an AI model trained predominantly on data from a specific demographic group may perform well for that group but might not generalise effectively to other groups, leading to inaccurate predictions.

Dr. Gomez Rodriguez also remarked that while AI models may be trained to not apply any bias in between demographic groups (e.g. between white and black populations), it may still apply a "within-group discrimination" (e.g. the programme may select equally between the white and black populations, but chooses persons among the black population that to the largest extend resembles persons from the white population). Hence, he emphasised the need to ensure that, in the pursuit of fairness, an AI model does not inadvertently favour certain individuals within a specific demographic group while making decisions. Using simulated screening processes can be used to evaluate whether AI models exhibited within-group discrimination.

Dr. Gomez Rodriguez also touched upon the challenges of making AI models more interpretable and user-friendly, highlighting the need for "prompt engineering" to design models that are easier for decision-makers to use effectively, and acknowledged the growing research interest in addressing disparities and inequalities in AI models' performance across different demographic groups.

In conclusion, AI models can be helpful in improving decision making and make it more efficient. However, there is always a risk for and need of addressing the potential for discrimination and bias. There is the need to keep working on improving AI models to avoid discrimination, in particular within group discrimination and generally to address disparities in AI performance across diverse demographic groups.

Giovanni Di Pino, is MD/PhD, Neurologist, Full Professor of Human Physiology and Head of the "NeXT: Neurophysiology and Neuroengineering of Human-Technology Interaction" Research Unit at Campus Bio-Medico University of Rome (Italy). He is the principal investigator of the ERC funded project *RESHAPE: REstoring the Self with embodiable HAnd ProsthesEs.* Prof. Di Pino's project studies prosthesis embodiment and identifies what makes a hand prosthesis easily embodiable by testing non-invasive brain stimulation that can facilitate embodiment.

In this context, Prof. Di Pino reflected on how diversity matters for body images. As individuals attain proficiency in a specific action, their motor trajectories become highly specific and repetitive. Conversely, when acquiring new movements, the motor system embraces variability to facilitate exploration and adaptation.

Prof. Di Pino drew a parallel between motor system variability and research impact, pointing to the fact that the diversity of a research group measurably amplifies the impact of the research. The rationale lies in the belief that diversity in research broadens the exploration of the environment, akin to the variability observed in motor control during learning.

Prof. Di Pino also discussed the relation between embodiment and diversity, contending that diversity can enhance embodiment. Notably, distinctions in attributes like skin colour, gender, or facial features may influence an individual's capacity to embody a specific body or perspective. Training individuals in embodiment yields discernible effects on various facets, encompassing motor skills, empathy, and attitudes towards stereotypes and biases.

Prof. Di Pino introduced the concept of Gibsonian Affordance, which delineates how an object suggests interaction, versus the concept of Ethical Affordance, where the tool suggests its purpose and prompts a mindful use for good, mostly determined by design choices. Disability can be perceived as a divergence in interaction with the environment. How people experience inability or disability in real-life situations are shaped by the affordances designed for able-bodied individuals. The ecological-enactive perspective proposes that disability constitutes a way of responding to different affordances in an environment tailored for able-bodied subjects.

Prof. Di Pino also discussed models of diversity, delineating how disability can be perceived either as a pathological condition (medical model) or a societal category chosen by society (social model). The emphasis lies in recognising the significance of not unequivocally accepting disability as a given condition, urging consideration of it not merely as a physical state but also as a consequence of variances with the normal subject.

In essence, a comprehensive understanding of motor control principles, variability, embodiment, and affordance can furnish valuable insights into the importance of diversity in research while simultaneously challenging preconceived notions surrounding disability. Prof. Di Pino in this regard advocated for a nuanced perspective that incorporates both physical and societal factors in shaping our comprehension of diversity and disability.

Lastly, Prof. Di Pino discussed the growing prevalence of bionic technology in contemporary society, introducing the idea of a new minority composed of individuals using such technology. He noted the expanding integration of artificial devices into the human body, such as cochlear implants to limb prostheses, and pointed to the need to reconsider traditional neurophysiological studies in light of these advancements in human-technology interaction.

The use of bionic technology, synthetic humans, and the blending of artificial and real body parts also raises ethical concerns. Prof. Di Pino introduced the concept of transhumanism, involving the augmentation of human capabilities, which challenges conventional notions of human identity. The boundaries of human identity are no longer solely defined by physical attributes but by responsible actions.

Prof. Di Pino acknowledged the uncertainty surrounding these issues, posing an open question about the risks associated with transhumanism. He emphasised the importance of ethical considerations and responsible actions as technology continues to evolve and integrate into the human experience.

In conclusion, Prof. Di Pino underscored the interconnectedness of physical and societal factors in shaping our understanding of diversity, embodiment, and the integration of bionic technology. His nuanced perspective urges a comprehensive understanding that incorporates both physical and societal elements in shaping our perception of diversity and disability, while also highlighting the ethical considerations surrounding the integration of technology into the human experience.

Session 3: Perceptions of Diversity

Ana Cristina Santos is Principal Researcher with Habilitation at the Centre for Social Studies, University of Coimbra (Portugal), where she is Chair of the Democracy, Justice and Human Rights Thematic Line. She is the principal investigator of the ERC funded project *Tracing Queer Citizenship over Time: Ageing, ageism and age-related LGBTI+ politics in Europe*.

Dr. Santos began by delving into the complexities of defining concepts and highlighted the fluid nature of language and perceptions. She presented the aim of the TRACE project, which is to explore queer citizenship over time and address key issues such as aging, ageism, and LGBTI+ related politics in Southern Europe. The project covers countries like Portugal, Italy, Malta, Slovenia, and Greece and sheds light on the varying levels of formal protection for LGBTQI+ individuals in these regions. The focus is on analysing the life experiences of older LGBTQI+ individuals who have lived through pivotal historical changes, from facing criminalisation to dealing with the AIDS crisis and finally witnessing the recognition of formal rights.

Dr. Santos introduced three main strands of research foci, namely the concepts of outlaw, outcast, and outlast. These represent different phases in the lives of LGBTQI+ individuals, ranging from legal challenges to societal stigma, and ultimately, the triumph of outlasting these struggles. The presentation underlined the significance of survivors, portraying the attainment of old age as a victory in the face of societal challenges.

The research methodology of the project involves the collection and analysis of life stories from individuals over the age of 60. The objective is to recover and value the embodied legacy of those who lived during a time when diversity was criminalised.

Dr. Santos concluded by addressing the question of living after surviving. An interview excerpt from a Portuguese context illustrated the ongoing challenges faced by older LGBTQI+ individuals, challenging the notion that life has universally improved for this demographic.

Dr. Santos reiterated the dynamic nature of words, particularly focusing on the word "surviving," which encapsulates nuanced meanings of enduring, persisting, and remaining. Older LGBTQI+ individuals are resilient individuals whose embodied memories constitute a precious legacy, providing invaluable insights for developing inclusive policies on diversity, sexuality, and aging.

In conclusion, Dr. Santos explored the intricate terrain of language and perceptions, unveiling the multifaceted aspects of queer citizenship through the TRACE project, emphasising the triumphs and challenges faced by older LGBTQI+ individuals and underscoring the enduring significance of their embodied memories for informing inclusive policies on diversity, sexuality, and aging.

Kristien Hens is a research Professor at the University of Antwerp (Belgium), Department of Philosophy and the principal investigator of the ERC funded project *NEUROEPIGENETHICS: Epigenetics, Experience and Responsibility: Implications for neurodevelopmental disorders*.

Prof. Hens' presentation explored her journey into researching the value of neurodiversity for both philosophy and science. Prof. Hens trained as a bioethicist, initially focusing on traditional bioethics. However, a shift occurred during a postdoc on reproductive

technologies, prompting her to delve into empirical research on the quality of life for individuals with conditions like Down syndrome and autism.

Her presentation highlighted the intersection of experiences of people with neurodiversity and the conceptualisation of biology, emphasising the move from a gene-centric view to understanding humans as relational beings influenced by their experiences. Prof. Hens introduced in more detail her *NEUROEPIGENETHICS* project, focusing on the implications of post-genomics for neurodiversity.

The term "neurodiversity" was discussed, emphasising its definition as a description of natural variation in brain function and behaviour among humans. The concept challenges the idea of a "right" way of thinking, learning, or behaving, asserting that differences are part of normal human diversity. Prof. Hens' presentation also touched on common misconceptions, such as associating neurodiversity only with high IQ individuals.

Prof. Hens discussed that a paradigm shift is underway, suggesting that neurodiversity is influencing biomedical sciences, particularly in autism research, where the focus is shifting from finding a cure to understanding and supporting different neurotypes to flourish. She stressed in this regard the great importance of including into research the lived experience and active engagement of neurodivergent individuals.

Prof. Hens also reflected on the political implications inherent in using terms like neurodiversity. She contended that scientific research is inherently political and that embracing diversity in science is not a detriment but a necessary aspect of producing meaningful and inclusive research. The challenges and opportunities of integrating neurodiversity into large-scale research projects were acknowledged, advocating for a scientific approach that genuinely values and incorporates neurodiversity while recognising and navigating the political dimensions of doing so.

In conclusion, Prof. Hens' presentation underscored the significance of understanding humans as relational beings influenced by their life experiences while striving to comprehend the quality of life for individuals with neurodiverse conditions. She underscored the implications of post-genomics for neurodiversity, challenging misconceptions and advocating for the inclusion of diverse neurotypes in research. Prof. Hens also emphasised the ongoing shift in autism research towards understanding and supporting different neurotypes, stressing the importance of actively engaging neurodivergent individuals.

Hans Alves is Professor of Social Cognition at Ruhr University Bochum (Germany). He is principal investigator of the ERC funded project *CEC: The Cognitive-Ecological Challenge of Diversity*.

Prof. Alves presented his interests in understanding how individuals form impressions about others, including individuals and groups, and the factors contributing to preferences, stereotypes, and prejudice. His presentation focused on some of the challenges that are associated with how humans react to diversity in society and the psychological mechanisms that lead to negative attitudes, especially in the face of increased diversity.

Prof. Alves acknowledged that while diversity is generally considered desirable, it also presents measurable challenges, such as reduced cooperation and heightened social conflicts, particularly in the short term. It is observed that people in certain areas may react negatively to an increase in diversity, which can be attributed to the human tendency to form negative attitudes towards novel and unfamiliar groups, including so-called "outgroups" and minorities.

The dominant explanation for these phenomena lies in motivational theories of intergroup biases. These theories suggest that individuals are motivated to feel good about themselves, leading to favouritism toward their own groups and derogation of others. However, Prof. Alves introduced an alternative approach, the cognitive ecological perspective, which posits non-motivated causes for challenges related to diversity and social conflicts.

The cognitive ecological perspective, akin to how an AI might develop biases, suggests that biases can arise from basic cognitive principles, learning processes, and information processing. Prof. Alves emphasised the role of the evaluative information ecology, referring to the structure and distribution of information relevant for judging people or groups. The argument is that biases are not solely driven by motivational factors but also by cognitive and informational processes.

To illustrate his research, Prof. Alves presented three examples. The first example explores how an increase in diversity can lead to a more negative impression of the social environment. The assumption is that negative behaviour is rare in the environment, and as diversity increases, learning processes become noisier, resulting in stronger regression and more negative attitudes.

The second example delves into why people form negative attitudes toward novel groups, outgroups, and minorities. Prof. Alves introduced the differentiation principle, suggesting that unfamiliar groups are associated with distinct (often negative) attributes, leading to an evaluative disadvantage for these groups.

The third example addresses the negativity of stereotypes. Prof. Alves argued that stereotypes are negative because negative attributes are better suited for differentiation. He explained this using the concept of diagnosticity, where negative attributes, being rare, increase the likelihood of identifying group membership.

In conclusion, Prof Alves introduced the cognitive ecological perspective as a complementary approach to understanding biases related to diversity and social conflicts. He emphasised the role of cognitive processes and information ecology in shaping attitudes and stereotypes, challenging the completeness of motivational explanations.

Eeva Puumala is a senior research fellow in social policy in the Unit of Social Research at Tampere University (Finland). She is the principal investigator of the ERC funded project *Coexistence and conflict in the age of complexity: An interdisciplinary study of community dynamics (EmergentCommunity)*, which explores the dynamics of coexistence in the face of rapid demographic, social, and political changes in European societies. The project focuses on diversity as a continuously constructed phenomenon, challenging traditional concepts and practices in understanding and responding to societal changes.

Dr. Puumala emphasised the complexity of coexistence and discussed the need for new conceptualisations and methodologies. Diversity is not a static entity but is a fluid and multifaceted aspect of people's everyday lives. In this view, the project examines how people make sense of their existence amid intersecting differences, particularly in diversifying cities.

Empirically, the project analyses nine cities across three countries, aiming to capture a wide range of diversity within and across national contexts. The goal is not just to highlight differences but to identify commonalities and generalities in the effects and meanings of ongoing changes.

The significance of cities as drivers of diversity was stressed, with a focus on how broader social and political changes manifest in urban spaces. The project challenges traditional

notions of identity and belonging, asserting that group-based and place-bound understandings do not fully explain how people form their sense of self and belonging in the context of diversification.

The intertwining of diversity and inequality in cities, especially in spatial terms, is explored by the project. The spatial organisation of coexistence is considered crucial, as people continuously encounter and are encountered by difference. This leads to an exploration of the affective dynamics of everyday life and how people respond to the continuous presence of diversity.

Dr. Puumala discussed the project's research approach, emphasising the acknowledgment of the social construction of diversity and the use of open-ended scientific inquiry. The project employs three distinct but complementary methods: ethnography, virtual technologies, and experimental human research. The combination of these methods aims to produce nuanced knowledge that goes beyond traditional approaches.

Project activities involve a meticulous desk study, ethnographic data collection, and spatial analysis. The collected data is then used to create 360-degree virtual videos, allowing participants to experience and make sense of diverse situations. The goal is to explore everyday emotions and their relevance to coexistence.

In conclusion, the Emergent Community project seeks to contribute to our understanding of how people live together in diverse urban environments, challenging existing concepts and practices through a multifaceted and innovative research approach.

Session 4: Roundtable: The Importance of Diversity in Research

The roundtable addressed the following questions: 1) Why does diversity matter and why is it important for the quality of research? and 2) What are the main challenges in integrating diversity in research designs, in pursuing research on diversity, and what are good practice that we can all learn from?

The roundtable moderator, **Angela Liberatore**, Head of the Scientific Department at the European Research Council, introduced the questions and gave the word to the speakers in the sequence below:

Joanna Drake, Deputy Director-General of the European Commission's Directorate-General for Research and Innovation.

Semiha Denktaş Professor and behavioural scientist leading the BRICS-Lab, Vice Dean and Research Director of the School of Social and Behaviour Sciences, and Chief Diversity Officer (CDO) at Erasmus University Rotterdam.

Emilia Gómez, Principal investigator on the project *Human and Machine Intelligence* (HUMAINT) at the Joint Research Centre (JRC), European Commission, and guest professor at the Music Technology Group, Universitat Pompeu Fabra.

Gian-Paolo Dotto, Professor at the University Hospital in Lausanne and Director of the Laboratory of Skin Aging and Cancer Prevention Dermatology Department at the Massachusetts General Hospital and Harvard Medical School.

Ana Cristina Santos, Principal Researcher with Habilitation at the Centre for Social Studies, University of Coimbra (CES-UC), where she is Chair of the Democracy, Justice and Human Rights Thematic Line.

Focusing on a <u>research policy perspective</u>, *Joanna Drake* discussed the interconnectivity of diversity, equality and inclusion, and underlined that these are principles the European Commission is striving to accomplish with its research policies.

She highlighted intersectionality as an important analytical perspective in research, prompting researchers to consider the intersections between sex, gender and other social categories. Adopting an intersectional analytical perspective in research, when relevant, is crucial for the quality of research and contributes to make research excellent. She explained that a sex and gender dimension is expected to be integrated into the research design of collaborative projects funded under Horizon Europe. She emphasised that to promote policies and create change, good practices and excellent research are needed, including bottom-up frontier research funded by the ERC, that address gender, inclusiveness and diversity.

Joanna Drake also highlighted that gender equality plans are a requirement for receiving funding in Horizon Europe and mentioned the EU Award for Gender Equality Champion, which is a European Commission initiative to recognise outstanding results achieved by research organisations through the implementation of Gender Equality Plans, as well as ongoing efforts to combat gender-based violence in research settings.

She went on to discuss how addressing diversity in research is very hard to achieve without also having a diverse research team. When evaluating consortia in collaborative research under Pillar 2 of the Horizon Europe programme, a balanced research team is one of the ranking criteria for proposals that have received the same score.

Another development highlighted by Joanna Drake was the introduction of a non-binary category for the gender identity of the applicant researchers. She also highlighted that the European Commission is continuously working with member states and research stakeholder organisations to develop a more inclusive and gender equal European R&I system in the framework of the new European Research Area (ERA).

From the <u>perspective of a university,</u> Semiha Denktaş discussed her five-year experience within the Inclusion Diversity, Equity and Access (IDEA) Center team at Erasmus University, that has focused on transforming research and the university as an organisation into a more inclusive place. She emphasised the importance of adopting a holistic approach that involves knowledge, science, and data-based strategies across various domains within the university, covering the whole pipeline, from youngsters to scientific personnel in the highest academic echelons.

Semiha Denktaş likewise highlighted the need for an intersectional approach to diversity and integration that considers varies dimensions such as educational background, ethnicity, cultural and religious affiliations, and gender in a non-binary way. She underscored the interconnectedness of diversity, inclusion and equity, which includes ensuring equal access to debates and discourses, to contribute to inclusion by design (contrary to exclusion by design). Also the importance of diverse research teams was highlighted, emphasising the value of different perspectives and the access to networks of diverse groups.

Semiha Denktaş went on to stress the need for inclusive leadership to ensure authenticity and belonging within teams. Inclusive research was discussed in various domains, from health issues like heart disease in women to broader historical perspectives on slavery and abolition. The rapid development of AI, for instance in using the recognition of facial features to predict the onset of certain illnesses, needs to consider diversity as many datasets are mainly based on people with white skin, and as a result AI is failing to recognise onset illness in people with dark skin. Overall, Semiha Denktaş advocated for recognising, valuing, and integrating diversity, inclusion, access, and equity throughout research processes and in the organisational structures as a means to a successful accommodation of diversity and inclusion.

As a researcher working on policy advice, Emilia Gómez highlighted the importance of diversity within the realm of AI, a field that is increasingly pivotal in policymaking and technological advancements. She discussed how her research project *HUMAINT* aims at fostering diversity within the scientific community involved in AI development as diversity of individuals contributing to AI systems significantly influences the state-of-the-art developments in the field. The narratives surrounding AI, she noted, are inherently shaped by the individuals involved in its development. The impact of unconscious biases among developers and researchers can influence the products and research outcomes in AI.

Emilia Gómez gave examples of biases in AI systems, such as the tendency for speech recognition techniques to perform better for male voices than female voices due to algorithmic familiarity with male frequencies. The impact of skin tone on the accuracy of facial recognition systems and biases in natural language processing and text-based generative AI were also discussed as well as gender bias in the recommendation algorithms of music platforms.

The broader context of diversity, non-discrimination, and fairness was acknowledged as one of the key requirements for trustworthy AI, a concept defined by the high-level expert group on AI appointed by the European Commission. This framework is considered during the evaluation of AI for its trustworthiness.

Moving on to discuss mechanisms for addressing diversity, Emilia Gómez outlined a number of key aspects. One key aspect is to monitor diversity (e.g. who author papers, who organise conferences, who are invited as keynote speakers, including different diversity angles such as gender, geographical diversity or balance between academia versus industry). Another important aspect is to analyse policies and actions taken by the AI research community to enhance diversity, such as rotating conference locations to involve different local communities. Other examples include visibility efforts and support actions to enhance participation of minorities, e.g., role model and mentoring programs or specific grants.

In conclusion, Emilia Gómez emphasised the need to incorporate diversity by design in AI, suggesting that the notion of diversity should be considered from the initial stages of model development to the engagement of a diverse community in the design process. This holistic perspective contributes to both improving diversity within the research community and creating more inclusive AI systems.

As scientist and ERC grantee, Gian-Paolo Dotto reflected on the importance of diversity, particularly in the context of personalised medicine versus precision medicine. He emphasised that recognising the unique differences among individuals is crucial, in particular in an era of advanced technological developments, including artificial intelligence as had just been discussed. He stressed that, within his own field, despite technological advancements, the relationship between a physician and a patient remains paramount.

A second important aspect for accommodating diversity raised by Gian-Paolo Dotto is the interdisciplinarity of research. Drawing from his experience as a molecular biologist, he discussed how interdisciplinary research should be complemented by interdisciplinary education to be fully successful. This will contribute to breaking down silos, encourage collaboration between different fields, and enhance the mutual learning that occurs when diverse perspectives are integrated into research and education.

As social scientist and ERC grantee, Ana Cristina Santos discussed the importance of diversity in research, challenges encountered, and good practices. She affirmed that diversity in research is essential, for the simple but very important reason that research that overlooks diversity is subpar and carries the risk of becoming a tool of oppression.

However, there are challenges as concerns diversity in research and research on diversity, including the distinction between neutrality and objectivity, ideological labelling, the notion of normalcy, internal and external resistance, and not least biases against qualitative research.

It is important to recognise that, while one should strive for it, neutral objectivity does not exist, neither in science. Research is always informed by some form of ideology, be it a theoretical framework or a system of thought, dictating a certain methodological approach and viewpoint. Only through a recognition of these fundamental aspects can inherent biases be explicitly acknowledged.

Moving on to good practices, Ana Cristina Santos suggested outreach efforts such as engaging with theatre, movies, exhibitions, and using documentaries to communicate research findings effectively to diverse audiences. She emphasised the significance of creating spaces within academia, forming research groups, and pushing boundaries to bring marginalised topics to the forefront of intellectual and political discourse. Additionally, she encouraged adjusting research methods and recruitment strategies to ensure diverse participation. Lastly, she proposed aligning research activities with international days related to specific topics to amplify the impact and visibility of diversity-focused research.

The floor was then opened for discussion. The conversation continued to reflect on the elusive nature of neutrality and objectivity in research, highlighting the implicit or explicit presence of values.

The recurring theme of adopting an intersectional approach was likewise emphasised as was the need to be aware of challenges such as tokenism and gatekeepers. The need for continuous critical monitoring to ensure that inclusion and accommodation of diversity does not merely become "window- dressing" was discussed and the need for serious anti-discrimination efforts was emphasized.

The need for a holistic integration of diversity principles into all aspects of academic organisations was also underscored, including the benefits of outreach programs spanning from primary schools to universities.

The lack of diversity in AI development kept surfacing as a critical ethical concern, with reservations being expressed about the predominant demographics – white, male, young and wealthy – leading and setting the course in the development of AI.

Participants collectively stressed the urgency for tangible actions, cautioning against leaving diversity and inclusion as principles of mere discussions. Practical elements such as resources, standards, and evaluation methods were identified as crucial components of effective diversity initiatives. The need for clear choices and unwavering commitment to drive genuine change was underlined.

The call for inclusive research designs also resonated as a recurring theme throughout the discussion, advocating for the integration of diversity and inclusion principles across policies, programs, and research activities. In conclusion, the roundtable participants affirm their dedication to translating words into meaningful action for tangible and lasting impact.

Concluding remarks by Geneviève Almouzni, Scientific Council Member and Chair of the ERC's Working Group on Gender and Diversity

Geneviève Almouzni summarised the presentations of the day on diversity in research across various scientific domains, which covered topics such as studying social inequalities in health, integrating diversity in research designs, addressing bias in machine learning, understanding human experiences living in diverse societies, and neurodiversity.

Geneviève Almouzni underscored the power of diversity as a driving force for innovation and progress. When people from diverse backgrounds come together, they bring a myriad of ideas, skills, and talents to the table. It is within this dynamic exchange of thoughts and experiences that ground-breaking solutions are often discovered. Diversity in research is, in other words, part and parcel of excellence.

The importance of diversity in research was emphasised, as it contributes to more representative, valuable, and ethical research as well as ensures a higher quality of research. She highlighted key reasons to consider diversity in research designs, including the need for representative study populations, avoidance of biased conclusions, and recognition of cultural influences on research outcomes. Intersectionality was also highlighted as a way to understand the simultaneous impact of multiple social factors on peoples' lives.

In the context of machine learning, Geneviève Almouzni pointed out the risks of biased algorithms perpetuating societal inequalities and stressed the importance of diverse and representative data. In health research, the impact of demographic factors on health outcomes and treatment responses was discussed, emphasising the concerns of excluding certain populations, both ethical and as regards the quality and applicability of the findings.

Geneviève Almouzni concluded by addressing the concept of "parachute science," where researchers from privileged regions conduct studies in less privileged areas without meaningful collaboration. She advocated for ethical research practices, such as establishing partnerships, capacity building, and fair sharing of benefits with local communities.

Geneviève Almouzni stressed that the rich discussions and lessons learned from the conference will inform ongoing efforts by the ERC Scientific Council's Gender and Diversity Issues Working Group to promote, monitor, and enable diversity in research.