Progetti di ricerca di Rilevante Interesse Nazionale

PRIN 2017 (triennio 2019-2022)

ROMA TRE
UNIVERSITÀ DEGLI STUDI

Giornata della Ricerca

24 maggio 2019 - Aula Magna del Rettorato

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La presente pubblicazione intende offrire, all'interno e all'esterno dell'Ateneo, una notizia essenziale, ma non generica né banalizzante, della ricchezza e della complessità dei temi che nel prossimo triennio saranno oggetto, a Roma Tre, di «Progetti di ricerca di Rilevante Interesse Nazionale» (PRIN). A tal fine i progetti premiati sono di seguito enumerati nell'ordine dei sotto-settori ERC di riferimento (all'interno delle tre grandi aree delle "Scienze della Vita", delle "Scienze Fisiche e dell'Ingegneria", e delle "Scienze Sociali e Umane"); di ciascuno è riportato il nome del responsabile dell'Unità di Roma Tre (preceduto da un "pallino" blu nel caso si tratti anche di Principal Investigator [PI]) e il dipartimento di afferenza, poi il titolo del progetto, in inglese e ove disponibile in italiano (in questo bando le proposte progettuali potevano essere presentate, com'è noto, anche solo in inglese), e infine il testo in inglese (senza edulcorarne le "technicalities") della "Brief Description" che ha già contribuito per la sua parte alla positiva valutazione della proposta.

Il finanziamento competitivo di Progetti di ricerca di Rilevante Interesse Nazionale è dal 1996 una costante – sia pure in distribuzione irregolare – del magro panorama del finanziamento pubblico della Ricerca di Base nel nostro Paese. L'iniziativa ha conosciuto nel tempo, com'è noto, varie forme di realizzazione: si è andati dall'originario cofinanziamento richiesto in termini monetari alla valorizzazione dei

mesi-uomo di attività retribuita dei docenti implicati; da progetti di durata biennale si è passati col 2010-11 al triennio; dalla classificazione dei progetti nelle 14 tradizionali "aree CUN" si è passati col 2012 alle tre "aree ERC", suddivise ciascuna in sotto-aree spesso trasversali rispetto alle "aree CUN". Dopo le tornate dal 2001 al 2009, con 9 bandi annuali dotati in media di ca. 100.000.000 € (max. 137.000.000 / min. 82.100.000), dal 2010 al 2017 si sono avute solo 4 tornate, difformemente dotate (la prima, 2010-2011, con una disponibilità di 175.500.000 €, quindi la scarna tornata 2012 con soli 38.250.000 €, per risalire ai 91.908.000 € del 2015 e ai ben 391.000.000 del 2017, con corrispondente impennata delle proposte progettuali presentate). Anche le modalità di articolazione per fasce, e di valutazione e selezione dei progetti hanno subito nel tempo notevoli e discusse variazioni.

Il risultato conseguito nei bandi PRIN resta comunque per un Ateneo, e soprattutto per un Ateneo generalista, un indicatore significativo sia della qualità della propria ricerca c.d. "bottom-up" che della capacità di fare rete, almeno nel Paese, dei propri ricercatori.

Le graduatorie del bando PRIN 2017 sono state pubblicate, assai lentamente, dal dicembre 2018 all'aprile 2019, e dovranno dar luogo – una volta emanati i decreti di ripartizione delle risorse (al momento mancanti in 24 sotto-settori su 25!) – a progetti da svolgere nel triennio 2019-2022. Roma Tre, che nel PRIN ha un'ottima tradizione (con un tasso di successo medio, nel più remoto periodo 1997-2009, del 36,2% per le Unità di ricerca e del 34,9% per i Coordinatori Nazionali, oggi PI) ha conseguito in questa tornata un risultato di indubbio rilievo sia in termini numerici (46 Unità, distribuite su tutti i dipartimenti, di cui ben 15 coordinate da PI nazionali) che di tasso di successo (25,3% per le Unità e 27,8% per i PI), che appare tanto più interessante se confrontato con quello dei tre bandi precedenti:

	2010-11	2012	2015	2017
unità proposte	126	67	214	182
unità finanziate	32	8	25	46
tasso successo	25,4%	11,9%	11,7%	25,3%

PI proposti	25	19	65	54
PI finanziati	5	2	6	15
tasso successo	20,0%	10,5%	9,2%	27,8%
tass. succ. naz. PI	35,6%	10,8%	6,8%	n.d.
	Confronto			
	-15,6%	-0,3%	+2,5%	n.d.

Lasciando a questo punto che la lettura delle schede parli da sè, mi limito a chiudere osservando che la varietà e l'ampiezza delle linee di ricerca documentate, ma anche alcuni loro aspetti di non casuale convergenza e/o coerenza, non possono essere letti che come conferma, per tutti certo stimolante, dell'assoluta validità dei "fondamentali" della ricerca di Roma Tre, e contribuiranno con la forza dei fatti – insieme agli altri risultati che si vanno conseguendo nella ricerca e nel trasferimento delle conoscenze, nella formazione a tutti i livelli e nella missione sociale dell'Università – al "biglietto da visita" del nostro Ateneo.

Mario De Nonno
Prorettore alle attività di ricerca scientifica di Ateneo

LS

LIFE SCIENCES

LS1
Molecular and Structural Biology and Biochemistry

● Maria Marino Dipartimento di Scienze

Triggering neuroprotective pathways to prevent neurodegeneration: role of estrogen receptor beta/neuroglobin signaling in Huntington disease

Attivazione di vie di segnale neuroprotettive per prevenire la neurodegenerazione: il ruolo della via di segnale recettore degli estrogeni/neuroglobina nella malattia di Huntington

Curative treatments of the neurodegenerative diseases including Huntington disease (HD) are lacking or inefficient being only symptomatic. To discover and develop interventions to delay the onset of HD, as well as other neurodegenerative diseases, is mandatory because a modest delay of 5 years in the onset of disability could reduce by half the costs and prevalence of these chronic conditions. Here, we propose to restore the neuroglobin-estrogen receptor beta (NGB-ERbeta) neuroprotective pathway as a novel approach to develop interventions to delay and/or prevent the onset of HD. Our preliminary data demonstrated that ligands of ERbeta enhance NGB levels and facilitate neuron survival both on cells and on in vivo models of HD. On these preliminary data, this proposal aims to discover new compounds more efficient to up-regulate NGB levels in neurons and to maintain its protective role in alleviating the symptoms and slowing down the progress of HD. To reach this aim, this proposal is devoted to the discovery of novel NGB inducers originating from natural compounds and synthetic small molecules libraries to define their impact on in vivo and in vitro HD models.

LS2
Genetics, Genomics, Bioinformatics and Systems Biology

❍ Fabio Polticelli Dipartimento di Scienze

Protein bioinformatics for human health

Bioinformatica di proteine per la salute dell'Uomo

While the impact of Italian bioinformatics tools in the scientific community is high, infrastructure and cooperation at the national level is limited when compared to other countries. This project aims to strengthen the collaboration between Italian experts in the field of structural bioinformatics and protein functional characterization. Novel tools will be developed for the functional characterization of proteins and generation of new models for human host-pathogen interaction, using Meningococcus as a test case. The project will provide means to coordinate and homogenize existing resources and tools maintained by the proponents under a common vision, while fostering the adoption of FAIR principles (Findable, Accessible, Interoperable, and Reusable) compliant with ELIXIR, the European sustainable infrastructure for biological data. The new software tools will be freely available to the entire community and encapsulated into containers in order to be easily integrated into widely used pipeline systems like Galaxy (a public software framework to generate scientific workflows, data integration and data analysis). The use case will provide the basis for targeting therapeutic sites and predict specific pharmacophores in the Ras superfamily for contrasting childhood Meningitis.

LS6
Immunity and Infection

● Paolo Visca Dipartimento di Scienze

Next-generation antibacterials: new targets for old drugs and new drugs for old targets

Antibatterici di nuova generazione: nuovi bersagli per vecchi farmaci e nuovi farmaci per vecchi bersagli

Combating antibiotic resistance is a priority of the public health agenda, and new antibacterials are urgently needed. Searching for new targets, development of new antimicrobials and repurposing of old drugs have become essential for overcoming resistance. This proposal is aimed at building-up a platform for the pre-clinical assessment of novel antibacterials at an early development phase, that have been preliminarily characterized by the participants. Two groups of compounds will be assessed: antimetabolites with antibacterial properties whose targets are unknown ("new targets for old drugs"), and new inhibitors of cell division and resistance to last-resort drugs ("new drugs for old targets"). The mechanism of action, range of activity on ESKAPE bacteria, synergism with antibiotics, anti-biofilm properties, toxicity, pharmacokinetics and efficacy in experimental infections will be investigated. Up-to-date approaches will be used, including "omics" technologies, advanced microscopy, genetic and molecular biology techniques, cell culture systems, and different animal models of infection. High-quality scientific production, industrial exploitation of results, science dissemination and training of young scientists enrolled by the consortium are the main areas of project impact.

LS7
Diagnostic Tools, Therapies and Public Health

❍ Viviana Trezza Dipartimento di Scienze

Early life social experiences and dysregulation of the brain reward system: The role of endocannabinoid transmission

Esperienze sociali nell'infanzia e alterazione dei circuiti cerebrali di gratificazione: ruolo del sistema endocannabinoide

Adequate social stimuli, especially during childhood, are critical for future wellbeing and for the development of appropriate social and cognitive skills. Conversely, adverse social experiences in the early stages of postnatal life are associated with altered neuronal development, leading to cognitive, emotional and social impairment, greater susceptibility to the onset of psychiatric illness, such as drug addiction and eating disorders. Here, focusing on the endocannabinoid (eCB) system, we will evaluate the experience of socially impoverished or socially enriched environment during the early stages of postnatal life on the risk of developing drug addiction, eating disorders or social dysfunctions. We will explore pharmacological manipulation of, and molecular, biochemical electrophysiological, genetic and epigenetic changes in, the mesolimbic eCB neurotransmission following either social enrichment or social deprivation early in life. Finally, in compliance with the "open science" strategy and "reduction" principles for laboratory animals testing we will establish a tissue bank and an open data repository from animals used for the project.

LS9
Applied Life Sciences and Non-Medical Biotechnology

❍ Riccardo Angelini Dipartimento di Scienze

Regulatory signals and redox systems in plant growth-defence trade off

Segnali regolatori e sistemi redox nel compromesso crescita-difesa nelle piante

When challenged by biotic stresses, plants rely on their innate immune system, which can be activated by Microbe-Associated and Damage-Associated Molecular Patterns (MAMPs and DAMPs). Activation of immunity is accompanied by a down-regulation of growth, referred to as growth-defence trade-off. This project aims at disentangling the interplay between plant immune and developmental processes by elucidating the regulatory circuits involving plant cell wall-derived DAMPs, namely oligogalacturonides (OGs) and cellulose fragments (Cel-f), and polyamines (PAs). Mechanisms for the homeostasis of these signals that rely on specific oxidases are a special focus of this study. Moreover, the complex dynamics of reactive oxygen species and calcium, key elements in the downstream transduction cascade, will be elucidated using in vivo approaches. The six participating units share a common background in plant defence and development and a high-level and synergistic expertise that covers all aspects of the proposed research. Acquired knowledge will be crucial for breeding- and biotechnology-based strategies aimed at reducing crop losses caused by stress and fulfils objectives of the Horizon 2020 Framework Programme (Excellent Science; Competitive Industries; Societal Challenge).

❍ Angelo Panno Dipartimento di Scienze della Formazione

Establishing Urban FORest based solutions In Changing Cities (EUFORICC)

Stabilire soluzioni basate sulla foresta urbana nelle città che cambiano

The EUFORICC project originates from the societal need to understand the adaptive processes to promote urban sustainability and to propose, implement and test innovative solutions assessing their effectiveness. EUFORICC brings together researchers with complementary expertise to contribute to develop a methodological framework including co-planning/co-design/co-management of urban forests finalized at assessing urban forest ecosystem services and disservices (UES and UEDS) and founding on the H2020 priority area of the Nature-Based-Solutions (NBS). EUFORICC will collect long-term data and key indicators on urban forest extension, structure, function, and change establishing monitoring protocols of UES and UEDS, based on hypotheses about the social and biogeophysical processes in urban and peri-urban settings that can help adapt to local sustainability policy. The research applies indicators in test areas and employs inventory, experimentation and modelling. Main findings will be then used to support the national strategy on urban green spaces. EUFORICC will involve a number of stakeholders with the objective to provide scientific and societal outputs targeted for the various communities including an interactive web-site, newsletters, workshops, guidelines and publications.

PE

PHYSICAL SCIENCE & ENGINEERING

PE1
Mathematics

● Lucia Caporaso Dipartimento di Matematica e Fisica

Moduli Theory and Birational Classification

Teoria dei moduli e classificazione birazionale

In algebraic geometry the spaces parametrizing geometric objects, such as varieties with given invariants, or sheaves on varieties, are themselves endowed with a natural algebraic structure which reflects the properties, both abstract and projective, of the parametrized objects. Moduli theory is the study of these structures in the various situations of interest, and it is the main topic of this project. Next to it, we study algebraic varieties up to birational equivalence, which is an equivalence relation of fundamental importance for algebraic varieties of dimension at least 2 and their moduli theory.

❍ Alessandro Giuliani Dipartimento di Matematica e Fisica

Mathematical Quantum Matter

Recent years have witnessed an increasing role of mathematics in many body theory and condensed matter. While most of the mathematical results in the field apply only to non-interacting systems, this project focuses on the role of the interaction, which provides a higher level of complexity, resulting in several of the most interesting macroscopic features. We take advantage of recent developments in the theory of renormalization, both in quantum field theory (QFT) and in dynamical systems and probability. We will focus on transport, and in particular on two of the most remarkable macroscopic consequences of the quantum nature of elementary constituents of matter: first, the issue of universality in topological insulators or Dirac materials, such as graphene or Weyl semimetals in the presence of interactions, for which a topological explanation is still lacking and which is of central relevance for nanotechnologies and for their relation to quantum field theory; second, the persistence or not of localization when interaction and a quasi-periodic or random disorder are both present (many-body localization), a question which has attracted great interest and for which mathematical results, somehow requiring KAM-like ideas, are extremely scarse and debated.

❍ Luciano Teresi Dipartimento di Matematica e Fisica

Mathematics of active materials: From mechanobiology to smart devices

Modelli Matematici per materiali attivi: dalla meccano-biologia ai dispositivi intelligenti

The project aims at developing innovative Continuum Mechanics methods and theories to model the soft and active behavior of artificial and biological matter, including living cells and tissues such as brain and muscles. The topic is not only relevant for its application in life science and biomedical fields where mechanical aspects have been shown to be as crucial as chemical and genetical ones, but also fascinating for the related challenging theoretical aspects. In fact, issues in finite elasticity, viscoplasticity, phase transitions, poroelasticity, material stability are challenged by such physical and biological systems exhibiting behaviors that cannot be straightforwardly framed in any standard theory of Continuum Mechanics. Hence, the project will tackle the mathematical challenges in soft and active mechanics with the aim of delivering innovative theoretical and numerical approaches. The project is designed to promote the interaction of prominent research centers, where different expertises cover a wide range of applications and mathematical approaches. Such interactions are unavoidable in facing the complex phenomena that will be studied. Due to its innovative character, a valuable part of the financial support will be devoted to postdoc positions.

PE2
Fundamental Constituents of Matter

❍ Giuseppe Degrassi Dipartimento di Matematica e Fisica

Precision Searches for New Physics

Although a few tantalising deviations from the Standard Model have accumulated in the flavour sector, New Physics has so far eluded direct searches at the high-energy LHC and can be out of its reach. Precision measurements and searches for rare phenomena (the High Intensity Frontier) will therefore play a crucial role in coming years. While the advent of Belle-II and the High Luminosity phase of LHC open up new opportunities in this direction, their expected experimental precision represents a challenge for present theoretical methods. To match the experimental accuracy and to interpret effectively the future results, new techniques need to be developed and a unified approach to the search for New Physics is necessary. Our project will i) decisively improve the theoretical description of key precision observables in the flavour and Higgs sectors; ii) provide a coherent and reliable framework for the interpretation of possible deviations from the SM. To this end, we have brought together a team of leading particle physics theorists operating in complementary areas, with expertise ranging from higher-order perturbative calculations to lattice QCD and New Physics, assembling a complete set of tools to meet the precision challenge posed by the coming generation of experiments.

PE3
Condensed Matter Physics

❍ Enrico Silva Dipartimento di Ingegneria

High performance-low cost Iron BaSed Coated condUctorS for high field magnets HIBiSCUS

High transition temperature, critical field and critical current are the three major requirements for high magnetic field applications of superconductivity. Currently, superconductors for high-field applications are still based on low-Tc Nb3Sn, which allows operating fields of 20T@4.2K. Indeed, copper oxide high-Tc superconductors (HTS), which largely overcome these limits turn out to be very complex materials, whose fabrication in the form of long wires/tapes requires articulated and expensive processes. Iron-based superconductors (IBS) discovered in 2008, could be a perfect compromise. Their superconducting properties largely exceed those of Nb3Sn and their intrinsic properties and preparation procedures appear less critical than those of HTSs.
HIBiSCUS aims at developing highly optimized IBS coated conductors (CC), taking advantage from an accurate material characterization and combined use of complementary techniques. We will develop new fabrication processes for IBS-CCs, relying on the advanced technologies developed in the last decades for HTS-CCs, but focusing on the possibility of simplifying the processes to drastically reduce fabrication costs and time. The optimization of IBS-CCs and their suitability for specific applications will be addressed.

PE6
Computer Science and Informatics

❍ Giuseppe Di Battista Dipartimento di Ingegneria

AHeAD: efficient Algorithms for HArnessing networked Data

Networks are ubiquitous in several domains. In many of today's applications, such as social networks, they are huge in size, with more than billions of nodes/edges. The ambitious goal of project AHeAD is to produce new powerful algorithmic tools to handle massive network analytics, thus providing scientific groundwork and technological advances for processing and visualizing massive, streamed and dynamic networked data. AHeAD will investigate novel algorithmic and visualization techniques and will apply the new findings especially to the domain of social networks. Achieving this goal requires a quantum leap in designing and engineering algorithms: the sheer size of the data and their networked and evolving nature pose new algorithmic challenges, which cannot be addressed by traditional methods. AHeAD is proposed by a highly qualified and integrated consortium of 6 research units, which are internationally recognized as leading groups in algorithmic research and have strong research ties and a long history of successful cooperation: Padova (PD), Perugia (PG), Pisa (PI), Roma Sapienza (RM1), Roma LUISS, and Roma Tre (RM3). Their high scientific profile is witnessed by their publication records and by their presence in boards of prestigious journals and conferences.

PE7
Systems and Communication Engineering

● Filiberto Bilotti Dipartimento di Ingegneria

Cloaking Metasurfaces for a New Generation of Intelligent Antenna Systems (acronym: MANTLES)

Mantelli dell'invisibilità per sistemi di antenne intelligenti di nuova generazione (acronimo: MANTLES)

The recent advances in electromagnetic (EM) metamaterials are having a dramatic impact in radio and communication engineering. In this framework, invisibility cloaks are certainly one of the most exciting discoveries, opening the door to intriguing unprecedented possibilities. Building upon the cloaking ideas we have pioneered and developed, we propose a new generation of intelligent antenna systems equipped with unique functionalities, as well as suitable and innovative design methodologies and reconfiguration strategies. Advancing the current state-of-the-art of cloaking metasurfaces, achieved by breaking their passivity and reciprocity, we will demonstrate the following major breakthroughs: 1) making antennas invisible one to the other (with a dramatic impact in the design of dense radio platforms for terrestrial and satellite applications); 2) designing invisible sensors able to detect an external EM field without disclosing their presence (allowing an almost perfect resolution in imaging, sensing, measurement systems, and furtive sensing of the surrounding environment); 3) making antennas in fast motion radiating as they were at rest, annulling the Doppler effect (with dramatic impact in communications for fast moving platforms, such as trains, planes, etc.).

❍ Cristina Ponti Dipartimento di Ingegneria

Quick, reliable, cost effective methodology for DIagnostics of Conformal Antennas (DI-CA)

The reduction of the cost of electromagnetic diagnostics of conformal, i.e. nonplanar, arrays is considered and pursued by a twofold strategy: the reduction of the number of the probing field points to a minimum and the use of only amplitude field information. For the former, the role of the source geometry is considered explicitly and innovatively; for the latter, state-of-the-art arguments concerning the solution of nonlinear inverse problems are invoked. Feasibility is shown by implementation of solution algorithms and numerical simulation tests.

In order to test a conformal antenna of easy realization and that can be arranged in different useful configurations with possible geometrical irregularities, use of periodic artificial materials like an Electromagnetic Band-Gap (EBG) one, is proposed. The antenna structure will be cheap and of new conception. It will mimic an array antenna and will be manufactured and tested under the innovative conformal geometry. Therefore, the developed algorithms will aim at performing experimental diagnostics of defects in the external layer of the radiating structure within an available anechoic chamber.

❍ Giuseppe Schettini Dipartimento di Ingegneria

WPT4WID: Wireless Power Transfer for Wearable and Implantable Devices

In future health-care systems, wearable/implantable devices are foreseen as strong breakthroughs to allow patients home monitoring, enabling better life and more sustainable health care systems. Although electronics for implantable sensor s are relatively mature, ensuring the energy to reliably operate these devices is still missing. This proposal is fully dedicated to develop solutions providing electromagnetic energy transfer wirelessly. The research has specific concerns to the trustworthiness and medical compliance of the implementations, searching for the best trade-off among miniaturization, energy transfer efficiency and safety. This main goal is achieved through a multidisciplinary approach able to efficiently model and characterize the devices and the wireless channel as a whole, for both near-field resonant and far-field radiative coupling mechanisms. In the latter case, the challenging millimeter-wave band will be deeply investigated. The resulting prototypes will be ex-vivo measured through in-house-developed phantoms. The five research units boast solid and complementary backgrounds. The planned extensive theoretical and experimental activities will also take advantage of the on-purpose recruitment of young research fellows in all the fields involved.

PE8
Products and Processes Engineering

● Andrea Benedetto Dipartimento di Ingegneria

Extended resilience analysis of transport networks (EXTRA TN): Towards a simultaneously space, aerial and ground sensed infrastructure for risks prevention

Resilienza delle reti di trasporto: verso una simultanea analisi satellitare, aerea e terrestre per la prevenzione dei rischi

An accurate assessment of both the health conditions of the linear transport infrastructures, such as roads and railways and the surrounding environmental features, stands as a crucial task for assuring the required safety, functionality and resilience standards over time. Typically, the evaluation of the asset resilience against major natural or human-caused events (i.e. exogenous occurrences) is conducted separately from the monitoring of the decay of safety and strength properties over time (i.e. endogenous events), which is rather related to maintenance purposes. However, the progressive contraction of the funds allocated on maintenance and prevention, together with the present lack of advanced technologies suitable for sufficiently accurate network-scale analyses, result in an overall limitation to the effectiveness of both the assessment activities. This project aims at evaluating the best methodological approach for achieving a comprehensive knowledge about the assets' conditions at the network-scale, with particular concern to its resilience to both exogenous and endogenous occurrences. Specifically, the proposed methodology is based on a data-fusion platform capable of integrating dataset collected through space-borne, air-borne and ground-launched sensing devices.

❍ Sonia Marfia Dipartimento di Ingegneria

3D PRINTING: A BRIDGE TO THE FUTURE (3DP_Future). Computational methods, innovative applications, experimental validations of new materials and technologies

STAMPANTI 3D: UN PONTE VERSO IL FUTURO (3DP_Future). Metodi computazionali, applicazioni innovative, validazioni sperimentali di nuovi materiali e tecnologie

The project goal is the development of advanced computational approaches to support the exploration of innovative structural applications based on 3D printing (additive manufacturing) technologies. The goal will be achieved combining activities along three directions: 1) computational methods, working on the development of: multi-scale and multi-field analyses, to properly capture 3DP material behaviors at different scales and with different physics; mechanical models for different classes of 3DP materials; optimization tools, to control local structures and to directly generate g-codes; 2) innovative applications, working on the design of: lightweight components for space applications; self-deployable/self-folding structures; highly tunable meta-structures for vibration damping; high-strength nanocomposite wire ropes; ceramic-like high-performance materials; foams with controlled porosity; concrete beams; 3) experimental validations of new materials and technologies, working on the production and testing of: high strength AI alloys; lightweight component for space applications; metamaterial components optimized for structural control; ceramic-like materials; foams with controlled porosity; freeform concrete beams; specimens for the definition of 3DP material standards.

❍ Paola Marrone Dipartimento di Architettura

TECH-START - Key enabling TECHnologies and Smart environmenT in the Age of gReen economy. convergent innovations in the open space-building system for climaTe mitigation.

TECH-START – Tecnologie abilitanti e ambienti intelligenti nell'età della green economy. Innovazioni convergenti negli spazi aperti e nel sistema dell'edificio per la mitigazione climatica

The research focuses on the relationship between "open space – building" systems and KETs (Key Enabling Technologies), to design smart environments oriented to climate mitigation. Smart dimension of outdoor and indoor spaces, supported by digital technologies and low-cost microelectronic devices, can play a key role in reducing climate impacts. By managing of data knowledge, scenarios simulation, strategies and models, pilot projects experimentation, the research aims to prefigure and elaborate new life styles and low-tech retrofitting processes, for reducing greenhouse gas emissions. Through huge quantities of data coming from observation and simulation models, the study focuses on the refurbishment of existing building stock, on dwellings and open spaces, on construction material and energy fluxes.
Technological and environmental retrofitting allows to reduce energy demand and improves performance of the open space-building systems integration (greening, insulation, HVAC systems efficiency). The rising of new behaviours shapes innovative living spaces and new conception of adaptive comfort in dwelling. Low cost retrofitting technologies, "0 km" processes and open access to digital innovations are further elements of the circular economy that the study aims to address.

❍ Alessandro Toscano Dipartimento di Ingegneria

Theoretical modelling and experimental characterization of sustainable porous materials and acoustic metamaterials for noise control

Modellizzazione teorica e caratterizzazione sperimentale di materiali porosi e metamateriali acustici per il controllo sostenibile del rumore

The purpose of the research - which is highly interdisciplinary - is the design and characterization of new sustainable porous materials and acoustic metamaterials, to be used as sound-absorbing and/or sound insulating panels able to absorb/reduce sound in the frequency range 50-5000 Hz. In order to obtain these purposes in a sustainable way, i.e., with low environmental impact and low embodied energy, metamaterials are particularly promising because their acoustic properties and operation frequency band do not depend specifically on the nature of the composing material, but on the geometric shape, size and space between the inclusions. They also have the advantage that can be (partially) transparent, unlike conventional materials for acoustic insulation that are opaque, can have reduced thickness, high flexibility and can even allow the free flow of air through them. The operating range of a metamaterial can be extended with superposition of thin layers, each one working in a different frequency band. The materials will be modelled both theoretically and numerically through dedicated simulation codes; prototypes will be then realized and tested in the lab. The actual sustainability of these materials will be verified through the Life Cycle Analysis approach.

PE9
Universe Sciences

❍ Enzo Franco Branchini Dipartimento di Matematica e Fisica

From Darklight to Dark Matter: understanding the galaxy/matter connection to measure the Universe

Da Darklight alla Materia Oscura: comprendere la relazione tra galassie e materia per misurare l'Universo

We are living in the golden age of cosmology. We have a "standard" cosmological model, capable of accounting for virtually all observations. Yet, 95% of the ingredients in this model are "dark substances", and are neither understood, nor physically detected. Dark Matter and Dark Energy research very often have been taking different paths. With this PRIN we aim at filling this gap, by bringing together on one side leading researchers in the field of Dark Energy and galaxy redshift surveys and on the other side experts in Dark Matter searches. The common ingredient of the two approaches is the use of large galaxy catalogues, both real and simulated, to understand the nature of the dark sector. This project brings them together, enabling crucial synergies on the optimal use of these data and their simulations. This project will enable touching upon questions that range from how to best test General Relativity using galaxies, to understanding the effect of massive neutrinos on the observed large-scale structure, to hopefully detecting first signals of dark matter particles decaying, which would be a revolutionary discovery.

❍ Andrea Marinucci Dipartimento di Matematica e Fisica

Black hole winds and the baryon life cycle of galaxies: the stone-guest at the galaxy evolution supper

The goal of this project is to assess or disprove black hole (BH) feedback as the physical driver for quenching star-formation in massive galaxies. Many indications point toward this solution, but the sparse BH feedback observations collected so far and the poor statistics have prompted skepticism on the relevance of AGN feedback in the context of galaxy transformations. Contradicting results mean that the jury is still out.

The project stems from the experience and seminal results provided by our team in the past years, and will be achieved exploiting two main assets: a) the large amount of dedicated data collected on today's flagship intrumentation (MUSE and SINFONI at the ESO/VLT, and ALMA to map ionized and molecular gas in AGN host galaxies thanks to their unprecedented spectro-imaging capabilities); b) the long experience and high level skills of our team members, which count both observation-oriented and model-oriented researchers. At the end of our project we would ultimately provide support to the feeding & feedback cycle of active galaxies, and quantitatively assess BH feedback physics. Should BH feedback not be a viable solution, we would be forced to look for a new physical driver for the quenching of massive galaxies, probably an even more important result.

PE10
Earth System Science

● Claudio Faccenna Dipartimento di Scienze

Intraplate deformation, magmatism and topographic evolution of a diffuse collisional belt: Insights into the geodynamics of the Arabia-Eurasia collisional zones

Deformazione intra-placca, magmatismo e evoluzione topografica di una catena collisionale diffusa: elementi per la comprensione della geodinamica della zona di collisione Arabia-Eurasia

The proposed multidisciplinary research aims to understand the geodynamic control on the far-field stress propagation and the morphotectonic evolution of continental lithosphere in the hinterland of a collisional zone. As natural laboratory we have selected key areas of the Arabia-Eurasia collision (E Anatolia, Caucasus, W and E Iran), where the structural/stratigraphic signals and the distribution of magmatism can be potentially linked to the Cenozoic spatio-temporal dynamic evolution at the plate boundary. The research strategy is organized in five work packages, where topics such as mantle dynamics, crust deformation and magma geochemistry will be investigated and integrated for the development of a comprehensive geodynamic model. Specific targets include characterization of 1) the rheological controls on the transmission of stresses and localization of deformation in the plate interiors, 2) the impact of mantle dynamics on the growth of orogenic plateaus, 3) the geodynamics of intraplate magmatism in collisional settings. The final synthesis is expected to shed light on the different geodynamic mechanisms (including interactions and feedbacks) responsible for the shaping of a continental collision zone and associated intraplate deformation.

SH

SOCIAL SCIENCES & HUMANITIES

SH1
Individuals, Markets and Organisations

❍ Valeria Costantini Dipartimento di Economia

Innovation for global challenges in a connected world: the role of local resources and socio-economic conditions.

Innovazione tecnologica per le sfide globali in un mondo interconnesso: il ruolo delle risorse locali e delle caratteristiche socio-economiche

This project aims at analyzing the socio-economic impact of innovation and new technologies. We will articulate a conceptual framework linking innovation to major contemporary challenges, like climate change, environmental sustainability, structural change, social inclusion and resilience to macroeconomic shocks. We will stress the constraining role of local idiosyncratic conditions, both economic and institutional and technological, in the process of international diffusion and adoption of technological and non-technological innovations, and the consequent importance of the matching between knowledge from external sources and the contexts of application. Empirical analyses will focus on international cross-country and cross-regional comparisons, with a special attention to the differences between advanced and developing countries, and the prospects for these latter to benefit from international diffusion of knowledge. We will leverage a wide array of methodologies, ranging from in-depth case studies development, to econometric techniques, macroeconomic simulation tools and social network analysis. The ultimate objective is to develop a coherent and organic set of policy implications mixing development with environmental, regional and innovation policy instruments.

SH2
Institutions, Values, Environment and Space

● Claudio Cerreti Dipartimento di Studi Umanistici

SYLVA - Rethink the sylvan: Towards a new alliance between biology and artificiality, nature and society, wilderness and humanity

SYLVA - Ripensare la «selva». Verso una nuova alleanza tra biologico e artefatto, natura e società, selvatichezza e umanità

The project intends to study the "Sylvan" as a dispositive (Agamben) that invests the space for relationships between humans, with animals and plants, with the components of the human soul including the "behavioral forest" deriving from social competition. The "natural" reality is changing: the domesticated one turns into the wild one, urban areas are re-naturalized, the "natural" spaces used grow in response to the consumption of soil. The design response to these changes appears so far without tools. An urgent reflection is needed, identifying conceptual and operational paths to build a new / ancient and lost relationship with the "natural".
The project will therefore be orchestrated and tackled using a perspective that would be "post-disciplinary", thanks to numerous and diversified high-level disciplinary skills, many young researchers to betrained in the project, as well as non-academic entities and staff (e.g. schools, associations, administrations). "Guides to the forest" will be created, training courses, awareness and dissemination actions coordinated with schools, associations and administrations, maps, WebGis, scientific meetings, publications.

● Emanuele Conte Dipartimento di Giurisprudenza

Religious Precept and Legal Norm. The Life and History of the Foundamental Dialectic of the Western Legal Tradition

Precetto religioso e norma giuridica: storia e dinamica di una dialettica fondativa della civiltà giuridica occidentale (secoli IV-XVII)

The traditional reading of Western legal experience generally understood the affirmation of law in the Middle Ages as an essentially secular phenomenon clearly distinct from theology. Our comprehension of the interactions between law and religion, or between legal and religious normativity (indeed so typical of our own as well as of other cultural traditions), is therefore inadequate. The first encounter between Christianity and the Roman Empire was accompanied by the codification of imperial law and of the Holy Scriptures, founding normative tradition and religious identity for centuries. Both textual bodies require interpretations. The ′understanding′ of the authoritative ′word′ (legal or religious) brings to the foreground questions relating to the interpretation and the ′normativity′ of the sacred texts. Even today they are fundamental for understanding the past and present connections between law and religion. The research aims to reconsider these issues in light of the renewed perspectives offered by modern legal-historical and theological-historical reflections. Such historical perspectives can provide new interpretations that lead to different and more solid comparisons with other civilizations characterized by a pervasive presence of the religion in public life.

❍ Lorenzo Lampariello Dipartimento di Economia Aziendale

FinTech: the influence of enabling technologies on the future of the financial markets

The project regards the analysis of the impact of new technologies on the current financial scenario (FinTech). The project is conducted by four units composed by academics with different backgrounds (financial mathematics, economics, law, etc.) so that the topic can be studied from a holistic point of view. Indeed, such expertise will be committed to: understand the technical workings of four digital technologies – namely, digital platforms, big data, algorithms and Distributed Ledger Technology (DLT); evaluate their economic effects on the financial system with specific regard to the different stakeholders involved (users, players and markets); answer the legal dilemma regarding the best regulatory strategy for addressing FinTech. While conducting the research, the units will focus on the theoretical issues raised by FinTech and the "enabling technologies" but will also benefit from their collaborations with different Italian supervisory authorities (Banca d'Italia, Consob, IVASS, etc.) to wholly understand their practical implications. Moreover, the units will conduct their research with an international perspective, benefiting from their current collaborations also with high-ranked foreign universities.

❍ Giovanna Pistorio Dipartimento di Giurisprudenza

Self- and Co-regulation for Emerging Technologies: Towards a Technological Rule of Law (SE.CO.R.E TECH)

L'impatto delle nuove tecnologie sui processi di auto- e co-regolazione: verso uno Stato di diritto tecnologico

The project aims to study self- and co-regulation for emerging technologies (e.g. ICTs, robotics, genomics and neurosciences) defining procedures compliant with constitutional values, public interests and the protection of fundamental rights. New technologies' regulation is still today one of the major issues for lawmakers at every level. In a fast-moving and increasingly complex world, regulators are finding harder and harder to balance the need to protect citizens with the need for innovation. Because of the technicality of the matter, the rule-makers are often captured by the addressees of the rules. Many scholars have investigated the shortcomings of conventional law-making in these fields. Nevertheless, very little work has been done so far on the interaction between conventional law-making and forms of voluntary self- and co-regulation in the field of emerging new technologies. The research will benefit from the interaction among scholars with deep experience in the interplay between technology and rule-making. The outcome of the research will advance the legal approach to technologies with also benefits for the entire community aiming, alongside to scientific improvement, to the creation of best practices and guidelines to be used in the self- and co-regulation.

● Vincenzo Zeno Zencovich Dipartimento di Giurisprudenza

Governance of/through Big Data : Challenges for European Law

Governare i (e attraverso i) Dati: Le Sfide per il Diritto Europeo

The main purpose of the project is to provide a detailed analysis of the legal foundations and limits of governance through big data. In particular, our project aims at presenting a transversal overview of the most relevant legal issues raised by the big data and artificial intelligence revolution, which transcend the public/private divide and are all strongly interrelated. We will focus on 4 main areas, which will be investigated from the perspective of Italian, European and comparative law:

1) data protection;
2) competition law;
3) public decision-making;
4) algorithmic information and regulation.

SH3
The Social World, Diversity, Population

❍ Francesco Agrusti Dipartimento di Scienze della Formazione

REsearch at the SERvice of Educational fragilitiesS (RE-SERVES)

RE-SERVES: La ricerca al servizio delle fragilità educative

This research proposal focuses attention on fragility and vulnerability issues in education, within the Italian context. Both fragility and vulnerability holds complex and multifaceted relations with education; accordingly, the proposed project builds on a composite research design. Besides its main focus on the relations between fragility, vulnerability and education, the project is structured in four sub-areas of in-depth investigation on topical issues in the Italian contemporary society, namely: civic disengagement; adolescents' aggressive and violent behaviours; youth social and economic exclusion; and the frailty of incoming migrants and unaccompanied minors. While assuming a collective form (Stake, 2000), the project builds on an organic and structured framework in regards to its epistemological, methodological, political and ethical instances, so as to avoid the risk of fragmentation. But to allow for in-depth investigations, each topical issue identified by the project is made the centre of attention by a research unit. Accordingly, the project is organized in six Work Packages (WPs), of which WPs 1-4 are research-specific, and WPs 5-6 are dedicated to project management and dissemination activities, respectively.

❍ Carmela Covato Dipartimento di Scienze della Formazione

School Memories between Social Perception and Collective Representation (Italy, 1861-2001)

Memorie di scuola tra percezioni sociali e rappresentazioni collettive (Italia 1861-2001)

The aim of this project is basically to research the way in which school, teaching, learning and education have been proposed – over the last two centuries – by the world of information and communication and by the culture industry. Nevertheless, the aim is to look at which memory of school and teaching has been developed as part of the official representation and public commemorations promoted by local and national Institutions based on a precise "memory policy" to acquire consent and to boost the idea of belonging to a specific community ("public use of the past"). From this viewpoint this research aims to set out the development of collective perception of the role and purpose of education between 1861 and 2001, as well as to highlight the changes found – within the same timeframe – in the way teachers' social status and their public function in schools were perceived. In fact, by studying the way in which schools and education have been collectively and symbolically represented over time, we can define the origin of some of the constraints still weighing upon the public image of school, as well as restore self-awareness and awareness of their role to all stakeholders in public education.

❍ Mauro Dorato Dip. Filosofia Comunicazione Spettacolo

The Manifest Image and The Scientific Image

We address the clash between the scientific image offered by science and the manifest image emerging from common sense. This dichotomy is typically put forward at a metaphysical level. We extend it to logic by distinguishing between the formal logic of the scientific image and the informal logic of the manifest image. Accordingly, we explore in parallel metaphysical and logical manifest/scientific dichotomies in order to reach a deeper understanding of the images and thus a perspective wherefrom the clash may be superseded. We focus on three crucial themes from the perspective of both images, namely properties, relations and related issues; time; the paradoxes generated by adjoining (parts of) classical logic to naive principles of truth and predication. We then turn to strategies for viewing the two images as compatible. This project may foster a more rational attitude toward science and its technological applications, favor a more effective teaching of science, logic and critical thinking, and suggest new solutions in applied ontology

● Edoardo Lombardi Vallauri Dip. Lingue, Letterature e Culture Straniere

IMPAQTS: Implicit Manipulation in Politics - Quantitatively Assessing the Tendentiousness of Speeches

IMPAQTS: Manipolazione mediante impliciti - Misurare la tendenziosità dei discorsi politici

The project aims at contributing scientifically to the quality of democratic cohabitation. It deals with the manipulative strategies of political communication, with special regards to linguistic constructions that convey information implicitly to reduce awareness of doubtful contents. The following tasks will be carried out: 1. Collection of a wide multimedia corpus of Italian political speeches (from the whole history of the Republic) and its thorough annotation according to the relevant categories of linguistic persuasion. 2. Building a web resource to make the annotated corpus available to scholars and people in the field, and fully searchable via any combination of relevant parameters.
3. Disseminating the results of the corpus analysis through a website, which will publish simple reports on the manipulation degrees of political speeches by all parties, candidates etc. The website will also provide multimedia tutorials on manipulative discourse to be downloaded for free (typically, for use in schools and other institutions). 4. Experimentally inquiring the correlates of implicit information processing in the brain, using signal processing techniques applied to encephalographic activity, to better clarify the neural bases of the persuasive power of implicits.

● Luca Aversano Dip. Filosofia Comunicazione Spettacolo

The Education of Art Music Audiences in Italy from the Twentieth Century until today

La formazione del pubblico della musica d'arte in Italia dal Novecento a oggi

The project deals with the musical education of audiences in Italy from the twentieth century until today, limited to the field of live-performed art music. The research follows two main lines: the historical perspective and a sociological analysis of the current situation. As for the historical aspect, the project addresses the following points: 1) the rise of the modern notion of audience's education, also with reference to gender aspects; 2) the role of educational institutions and other active bodies in the field of music education; 3) the role of the means of communication; 4) the contributions of the most noteworthy figures involved in the educational field.

As for the sociological aspect, the project aims to address the following points: 1) the main characteristics of the present-day audience and the relative constitutive processes; 2) institutions and social groups of reference which can educate the musical audience in Italy and/or influence its tastes; 3) the impact of artistic-musical lobby organisations.

The objective is to identify the roots and evolution of the main issues concerning audience education policies today on the one hand, and to identify possible future interventions to carry out on the other.

● Mario De Caro Dip. Filosofia Comunicazione Spettacolo

New challenges for applied ethics. The moral impact of scientific and technological advances

Nuove sfide per l'etica applicata. L'impatto morale degli avanzamenti scientifici e tecnologici

The goal of this project is to show that a liberal-naturalist view of the human being (averse to both the antiscientific and the reductionist/eliminativist views) would make it possible to deal in a satisfactory way with the moral and sociopolitical challenges with which contemporary science confront us. In order to pave the way for this conclusion, we intend:

I. To analyze, from both a historical and a theoretical perspective, the intellectual dynamics that have generated the present unsatisfactory alternative between the antiscientific and the reductionist/eliminativist views of the human being.

II. To investigate three crucial cases taken from applied ethics – regarding the end-of-life decisions; the relationship between reasoning and emotion in moral judgment; and communication ethics and ICTs – that could, in our opinion, show that a suitable liberal naturalist view facilitates the harmonization of the fundamental categories of the ordinary image of the world with the new scientific and technological findings. In this respect, our methodology will integrate theoretical reflection and empirical research. We will also develop a communication plan with the aim of disseminating the results reached by our project.

● Mario De Nonno Dipartimento di Studi Umanistici

The Transmission of Ancient Linguistics: Texts and Contexts of the Roman Grammatical Studies

Le tradizioni della linguistica antica: testi e contesti degli studi grammaticali nel mondo romano

A historical-cultural, philological and codicological investigation of Latin and Latin-Greek texts dealing with grammar, metrics and lexicography that are unpublished or only available in outdated editions, with the aim of producing print editions and a dedicated online portal. It will be articulated as follows: (1) analysis of the forms of transmission of Latin grammars and their manuscript witnesses, and online cataloguing of Mss. of grammatical content produced before the end of the 11th Century; (2) preparation of critical editions, with translation and/or commentary, based on a full and direct exploration of the manuscript tradition and using the most suitable ecdotic methodology for each specific typology of text, with publication in print in the series Collectanea Grammatica Latina (Bibl. Weidmann.) and online open-access publication of critical texts and apparatuses; (3) contributions to in-depth analysis and valorisation of the content, form and terminology of ancient grammatical and metrical doctrine, with particular regard to their influence on the linguistic tought of the Middle Ages and the modern period; (4) a reappraisal of grammatical texts as sources for the knowledge of 'auctores' lost in direct tradition, as well as the basis for publications of fragments.

❍ Maria Luigia Fobelli Dipartimento di Studi Umanistici

Navigating through Byzantine Italy. An Online Catalog to Study and Enhance a Submerged Artistic Heritage

Navigare nell'Italia bizantina. Un catalogo online per la conoscenza e la valorizzazione di un patrimonio artistico sommerso

The number of Byzantine objects preserved in Italian museums and churches is enormous, yet this artistic heritage is dispersed throughout the country, forming a "submerged" network that is barely visible and even less studied. The main purpose of this project is to create an online database to catalog objects on display or publicly accessible in Italy that date back to the Byzantine Millennium (330-1453 CE). This database, which is currently lacking, will help reconstruct those cultural dynamics that determined the transmission of visual models over the centuries between the eastern and western Mediterranean. Besides the database, the project will result in two additional outcomes: a workshop and a volume. This project has four main goals: 1) helping the development of research in art history; 2) promoting cultural tourism, by aiding museums and institutions on the territory; 3) supporting education and providing new material for schools and universities; 4) facilitating the conservation and restoration of the objects. The research group consists of 20 academic scholars and 4 young researchers (to be recruited) divided into 4 Units.
The project will encourage a better understanding of the cultural identity and the cooperation among universities, schools and museums.

❍ Luca Marcozzi Dipartimento di Studi Umanistici

Petrarch's ITINERA: Italian Trecento Intellectual Network and European Renaissance Advent

ITINERA: La rete intellettuale europea del Trecento e l'alba del Rinascimento attraverso lo studio dei corrispondenti di Petrarca e delle loro relazioni

This project aims at a census of Petrarch's friends and correspondents by way of an innovative work tool, the purpose of which is the reconstruction of Petrarch's intellectual network in the context of the European Trecento. Petrarch's literary, scholarly and diplomatic relations provide a unique insight into a culture and society in transition from the civilization of the Middle Ages to that of Renaissance Humanism. Of this transition Petrarch was the initiator, both as a prominent Latin writer and a celebrated model for vernacular poetry. His outstanding epistolary prose (Latin) and verse (Latin and vernacular) engage with over 200 correspondents characterized by wide geographical distribution and social variety. In collecting the relevant documentary, historical, philological, codicological, paleographical and archival evidence into a database, the project builds upon previous achievements while overcoming their limitations (excessive pulverization and the overconfident treatment, typical of positivist erudition, of Petrarch's texts as plain documentary sources). The interaction of multiple competences (historical, IT, geographical) and the diversified interrogation modalities of the collected data will produce a map of intellectual exchanges across fourteenth-century Europe.

❍ Anna Pegoretti Dipartimento di Studi Umanistici

Books and Readers in Florence from the Thirteenth to the Fifteenth Century: The Library of Santa Croce

Libri e lettori a Firenze dal XIII al XV secolo: la biblioteca di Santa Croce

The project aims to study, enhance, and preserve the substantial book and cultural heritage of the library of the Florentine Franciscan house of Santa Croce, and to reconstruct the intellectual environment of the convent from the 13th to the 15th century. Main goals will be the description, cataloguing and digital reproduction of the approximately 900 manuscripts in the library collection (housed in Florence in the Biblioteca Medicea Laurenziana and in the Biblioteca Nazionale Centrale); the critical edition and comparative study of extant inventories (published and unpublished); a systematic enquiry of the actual forms in which the great classical, philosophical, theological and biblical texts were being read, studied, interpreted and transmitted in the proposed timeframe. Specific attention will be paid to the interactions that some great contemporary intellectuals and authors, such as Dante Alighieri, had with this corpus. Results will be collected in a web-based open-access database, which will be a markedly innovative tool for research in the production, circulation and use of manuscripts, one which will combine methodologies of different disciplines (codicology and palaeography, philology, history of literature and philosophy) and cutting-edge text and image processing.

❍ Vito Zagarrio Dip. Filosofia Comunicazione Spettacolo

Modes, Memories and Culture of Film Production in Italy (1949-1976)

Modi, memorie e culture della produzione cinematografica in Italia (1949-1976)

The main question underlying the research project concerns the existence of a specific "Italian System" in the field of film production. To answer this question, a historical period from the Fifties to the early Seventies will be considered: despite being one of the most significant periods in national film history, the aspects of industry and production have seldom been investigated indepth. The same period was characterized by an extraordinary dynamism, as can be seen when comparing the new typologies of production (cooperative productions, co-productions, etc.) and the emergence of new firms while some historic production companies were leaving the business. Moreover, the chosen period allows us to analyse how the system reacted not only to a time of prosperity, but also to a phase of depression, which is equally as significant to verify how the industry reconfigured itself. The economic rise stopped at the beginning of the Seventies, a decade during which Italian cinema was forced to rethink its position within the national mediascape: 1976 would serve as a cut-off date, when the Constitutional Court liberalized on-air transmissions (Constitutional Court judgement n. 202) ushering in an upheaval in media and film production.

SH6
The Study of the Human Past

● Giorgio Caravale Dipartimento di Scienze Politiche

Books in motion. Circulation and Construction of Knowledge between Italy and Europe in the Early Modern Period

Libri in movimento. Circolazione e costruzione di saperi tra Italia e Europa in età moderna

The main aim of this project is to reposition the history of the book at the heart of the historiographical debate about the construction of a European (and worldwide) cultural space consisting of exchange, influence and reciprocal contamination. Book historians have focused above all on the means used to transport books, the trade routes followed, the partnerships that enabled these exchanges between cities and markets all over Europe, the interaction between sellers and buyers and therefore the channels of movement of texts. Using this body of knowledge as a support, this project aims to use the history of the book as a gateway to access the history of culture by reflecting on different local, national and international tastes, the diverse perspectives on a text in distant social and denominational contexts and the different ways in which texts were received by government institutions, different communities of readers and even individual readers. The members of this project will concentrate on the production, circulation. and translation of printed books and the social and cultural contexts of their repackaging through textual adaptations in different linguistic and denominational contexts from the original ones.

❍ Enrico Carocci Dip. Filosofia Comunicazione Spettacolo

Transatlantic Transfers: the Italian Presence in Post-War America

Trasferimenti transatlantici. La presenza italiana nell'America del secondo dopoguerra

The Proposal will shift the research agenda from charting the cultural Americanization of Italy to retrieving context-specific instances of the Italianization of style in the U.S.A., and from a national/international to a transnational/global framing of the history of relations between Italy and the U.S.A. The Research is designed to trace the emergence, manifestations, and meanings of an Italian style (the so called "made in Italy") - distinctly "Italian" and "modern" - that originated in Italy and became internationally known in the 1950s and 1960s, but whose visibility has depended on a complex international and intercultural infrastructure for cultural, political, and economic exchange between Italy and the U.S.A. It is also designed to investigate how specific Italian works of art, literature, film, design, fashion, visual culture, architecture, food and popular culture were introduced to American audiences (through events, exhibitions, book reviews, advertisements, festivals), between 1949 and 1972, and how a recognizable modern style associated to Italian iconographic people (writers, artists, designers, intellectuals and movie stars) was appropriated as a marker of distinction in the identity formation of an upward mobile, cosmopolitan, affluent American middle class.

❍ Vito Lorè Dipartimento di Studi Umanistici

Fiscal Estate in Medieval Italy: Continuity and Change (9th - 12th centuries).

Patrimonio del fisco regio nell'Italia medievale: continuità e cambiamento (secoli IX-XII)

The project aims to study the fiscal patrimony as the material foundation of public power, and its development in the 11th and 12th centuries. The topic will be investigated from a broad diachronic perspective, by comparing the development of different areas in Italy and investigating specific aspects related to fiscal properties. In addition to providing new data on this specific issue, the research aims to address key questions such as economic growth in the High Middle Ages, the functioning of political systems in southern Italy, and the distinguishing features of early communes. Each unit will deal with a different aspect: the long-term development of fiscal estates in southern Italy, in relation to the transformation of local political frameworks; their management by major royal monasteries in northern Italy; the role they played in Tuscany as a source of revenue for political authorities and how they influenced the economic system of the region; their material and immaterial legacy within the context of urban communities in the 10th-12th centuries. A key element will be the analysis of documents pertaining to the study of fiscal estates, not just as a research topic in itself, but also as a methodological issue with broader repercussions for medieval scholarship.

❍ Maura Medri Dipartimento di Studi Umanistici

The Architecture of the Emperor. Official and private residences, urban landscapes and harbours in the age of Hadrian (117-138 AD).

L'Architettura dell'Imperatore. Residenze ufficiali e private, paesaggi urbani e porti nell'età di Adriano (117-138 d.C.)

The proposed research concerns understanding, analysis, cultural enhancement of Villa Adriana and Ostia. Its goal is an analysis of Roman architecture in the age of Hadrian (117-138 AD) based for the first time on analytical and systematic study of monuments (such as contexts of structures and furniture) and monumental complexes. After the edition of all the buildings in Rome (Carandini, Carafa 2012-2017) and Athens (Lagogianni-Georgakarakos, Papi 2018), the residence of the Emperor in Tivoli and the port of Rome will be examined using the same methods.
Research outcomes will be an Archaeological Information System for the management of the two areas; reconstructions of the Villa and Ostia buildings; atlases and publications dedicated to the history of places, monuments and furniture. The activities have been planned with: the Central Institute of Archeology, Villa Adriana Villa d'Este Institute, the Archaeological Park of Ostia Antica. The scientific community, the Administration of Cultural Heritage and the public will have the opportunity to access this system of knowledge thanks to an innovative technological tool. A procedure for analysing and managing complex archaeological sites that can be replicated in other contexts of the classical world, will also be developed.

❍ Simona Merlo Dip. Filosofia Comunicazione Spettacolo

Political cultures in the transition from Communism to "illiberal democracies". The cases of Russia, Ukraine and Poland.

Culture politiche nella transizione dal comunismo alle "democrazie illiberali": il caso di Russia, Ucraina, Polonia

The project is part of the branch of studies on the transition from Communism to democracy in Central-Eastern Europe and in the former Soviet Union, starting from the debate on the "hybrid regimes" and the "illiberal democracies" and focusing attention on three cases: Russia, Ukraine and Poland, in the period between 1985 (election of Gorbachev as Secretary-General of the CPSU) and 2004 (Poland's entry into the EU, the orange revolution in Ukraine, the end of the first term of office of Putin as President). The intention is to make a contribution to a field of studies which is still under development, shifting the axis of research from an approach of a politological nature to a purely historical one, through the study of the formation of the cultures and political practices which have generated systems in which forms of democracy are mixed with expressions of authoritarianism. Attention will be on the topic of the "legacies", of Communism in the first place, but also of the traditions and political practices of a longer period. The interaction of different legacies during the transition will be analysed, looking on the one hand at the relationship with history and with the national past, on the other at the evolution of some key concepts to work out political cultures.

❍ Renato Moro Dipartimento di Scienze Politiche

Italy and the "Shock of the Global" during the Seventies: perceptions, interpretations, reactions

L'Italia e lo "Shock della globalizzazione" negli anni settanta: percezioni, interpretazioni, reazioni

Globalization is one of the most relevant processes of the contemporary age. Historical research has increasingly identified the Seventies as a particularly crucial period of transition between the prevailing socio-political and economic structures of the post-war world (the ″golden age″ of national capitalism) and a new horizon, much more integrated at a global and transnational level. The ″Shock of the global″ – a formula derived from international historiography – identifies the transition period between these two models: the crisis of the old world and the dawning of the new were intimately intertwined. The research project aims to investigate how Italy as a whole experienced this passage, focusing on the perceptions of the crisis and novelties, their interpretations and the resulting reactions and complex processes of adjustment. The project starts from a list of dates selected to symbolize transnational innovations (organized in specific clusters). A wide and diversified set of sources will allow to study these events' impact in collective mentality, social groups, political parties and Italian culture. The Italian case will thus be studied beyond the narrow national perspective, with results potentially comparable with the European and global scene.

● Leopoldo Nuti Dipartimento di Scienze Politiche

Science, technology and international relations: case studies in Italian foreign policy

Scienza, tecnologia e relazioni internazionali: casi di studio della politica estera italiana

From the mid-1960s to the early 1990s, technological and scientific innovation played an increasingly critical role in shaping the cultural and economic modernization of Italy, as well as its capacity to remain a credible actor in the international scene. Yet, the crucial interaction between science, technology and diplomacy has been usually neglected by the academic literature. This project intends to close this gap by investigating some closely interconnected case studies which posed unprecedented challenges for Italian policy makers, as each one of them was deeply significant both for its domestic repercussions and for Italy's international standing. It will look at the interplay between such fields as energy security, the environmental impact of energy choices, and the technological challenges of innovation in the aerospace and nuclear industries. A key feature of the project will be its focus on the interaction between technical experts and decision makers, to bypass the problematic methodological dichotomy caused by rigid approaches which tend to concentrate exclusively on either one of these categories. The availability of some hitherto unavailable archival sources, and the extensive use of interviews, will allow the project to move beyond these conceptual rigidities.

Appunti