FILOZOFSKI FAKULTET UNIVERZITETA CRNE GORE

Konferencija (Program / Knjiga apstrakata)

NAUKA, FILOZOFIJA NAUKE I NAUČNA METODOLOGIJA

Podgorica, Crna Gora, 27. septembar 2024.
Univerzitet Crne Gore, Rektorat

FACULTY OF PHILOSOPHY, UNIVERSITY OF MONTENEGRO

Conference (Programme / Book of abstracts)

SCIENCE, PHILOSOPHY OF SCIENCE AND SCIENTIFIC METHODOLOGY

Podgorica, Montenegro, September 27, 2024
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Urednik:
Vladimir Drekalović

Izdavač:
Golbiprint

Tehnička obrada:
Dalibor Vukotić

Tiraž:
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Golbi

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Filozofski fakultet Univerziteta Crne Gore

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Marica Melović, Direktorat za naučno-istraživačku djelatnost Ministarstva prosvjete, nauke i inovacija / Directorate for Scientific Research Activities of the Ministry of Education, Science and Innovation

Tatjana Novović, dekanica Filozofskog fakulteta Univerziteta Crne Gore/ Dean of the Faculty of Philosophy, University of Montenegro

Vladimir Drekalović, predsjednik Organizacionog odbora konferencije / President of the Organizing Committee of the Conference

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SLOBODAN PEROVIĆ

Filozofski fakultet, Univerzitet u Beogradu /
Faculty of Philosophy, University of Belgrade

Vrednost savremene kosmologije: romantično naspram praktičnog razumevanja nauke

Evolucija naučne misli postepeno je dovela do sveprisutnog razumevanja nauke kao prvenstveno praktične oblasti koja se oslanjanja na privremene konceptualne i eksperimentalne alate bez jakih ontoloških preferenci. Još od početka 19. veka, takvo razumevanje je u kontrastu sa romantičnim shvatanjem nauke, zasnovanom na istraživanju jedinstva prirode, kosmosa, života i čovečanstva. Naučnici i naučne oblasti oscilirali su između ove dve paradigme, da bi razumevanje nauke kao prvenstveno praktične delatnosti prevladalo zbog svoje saznajne efikasnosti i univerzalnosti metoda. No tako shvaćena nauka se suočava sa kritikom eksternalizacije bilo kojih vrednosti, koje su pak inherentne nauci vođenoj romantičnim ciljevima. U smislu društvenih vrednosti, praktična nauka se fokusira na kratkoročne tehnološke dobitke i isključivu epistemološku vrednost rigorozne analize, za razliku od romantične nauke koja daje prioritet uvidima u dugotrajnu kosmičku sudbinu čovečanstva rasvestljenu putem pouzdanih naučnih dostignuća, u proučavanje kosmosa kao jedinstvene celine. Tenzija između ova dva shvatanja nauke naročito je izražena, iako malo diskutovana, u modernoj kosmologiji, dovodeći u pitanje njene društvene i epistemološke vrednosti. Čini se da romantični ciljevi ovu oblasti postavljaju na čvršće tlo, epistemološki i socijalno, na duže staze, i čak je čine osnovnom prirodnom naukom. U svakom slučaju, potrebno je nijansirano razumevanje odnosa između ova dva pristupa nauci, ne bi li se razumela trajektorija razvoja i budućnosti savremene kosmologije i nauke u celini.

Romantic versus Toolbox Science: Assessing the Value of Modern Cosmology

The evolution of scientific thought led to the The Toolbox science, characterized by its reliance on provisional conceptual and experimental tools without strong foundational commitments, in contrast with the Romantic science, founded on the exploration of the unity of nature (cosmos, life and humanity). Scientists and scientific fields have navigated between these two paradigms, and while Toolbox science has prevailed due to its epistemic utility and universal character, it faces criticism for externalizing the values inherent in Romantic science. In terms of social values, the Toolbox science focuses on short-term technological gains, and on epistemic value of rigor, in contrast with the Romantic science that prioritizes humanity's cosmic destiny while assimilating the reliable scientific gains into the study of the cosmos as a unified whole. This tension is reticent in modern cosmology, questioning its social and epistemic values in the context of rapidly advancing scientific knowledge and societal concerns. The Romantic goals of the field seem on a firmer ground in the long run. In any case, we urge a nuanced understanding of the interplay between Romantic and Toolbox approaches in shaping the trajectory of modern cosmology and scientific inquiry as a whole.

RADOVAN STOJANOVIĆ

Elektrotehnički fakultet, Univerzitet Crne Gore, Podgorica, Crna Gora /
Faculty of Electrical Engineering, University of Montenegro, Podgorica, Montenegro

Hiperpublikovanje i naukometrija – dvije strane medalje

Publikovanje je staro koliko i pisana riječ. Kroz istoriju je imalo nemjerljive pozitivne efekte na razvoj civilizacije. Osim urođenih i stečenih potencijala čovjeka da piše i obja-vljuje svoja djela, publikovanje je u velikoj mjeri zavisilo i od drugih činilaca kao što su pismo i tehnologije saopštavanja/štampanja. Ekonomski gledano, nije bilo profitabilno za autore, već ako je služilo u svrhe propagande, manipulacije i podrške trenutnim političkim strukturama. Bilo je privilegija manjeg broja društvene elite, koji su tu čast sticali talentom, a prvenstveno upornim dugotrajnim radom i ličnim odricanjima. Kakvo je stanje danas? Um autora se malo promijenio. Pismo, takođe. Razvojem računarske tehnike, telekomunikacija, Interneta i vještačke intelegencije, publikovanje, ili prosto pisanje, doživljava ekspanziju neslućenih razmjera. Svakome se pruža mogućnost da piše o čemu god hoće, kada god hoće i gdje god hoće. U spoju sa birokratskim uredjenjem, marketinško-finansijskim manipulacijama, postaje poprilično profitabilna djelatnost, naročito za naučnu-istraživačku populaciju. Rezultat je gigantska količina materijala pisane vrste, toliko naraslog, da se od „šume ne može vidjeti brijeg“, da je kvantitet u potpunosti potisnuo kvalitet, te da je problem za sebe pronaći vrijedne zapise u hrpi površnosti i bezvrijednosti. U nauci i obrazovanju takvo stanje pisane riječi i djela poprima razmjere epidemije.

U izlaganju, autor daje svoje vidjenje kako hiperpublikovanje u oblasti nauke i istraživanja uništava iskonski karakter istog. Šta su posledice takve pojave? Da li se kvalitet naučno-istraživačkog rada pojedinca ili institucije može mjeriti prostim brojanjem i formalnom kvalifikacijom publikovanih naučnih radova? Šta je naukometrija, iz ugla današnjice? Kako je fenomen hiperpublikovanja i naukometri-

je postao jedan od primjera cirkularne ekonomije ili specifičan eko sistem? Šta je to kapital kredibilnosti? Kako hiperpublikovanje i banalizacija naukometrije utiču na male zemlje i one u razvoju? Ko su mangupi u sopstvenim (naučnim) redovima i kakav je mehanizam njihovog djelovanja? Primjeri hiperpublikovanja i prevara date kategorije u domaćim i medjunarodnim razmjerama.

Generalno posmatrano, zaključak izlaganja je da se naučna i prosvetna zajednica moraju suočiti sa datim problemom i izboriti se sa njegovim negativnim posledicama. Prosta detekcija i isticanje problema nijesu dovoljne, već se on mora shvatiti u kontekstu uzročno-posledičnih procesa i analitički sagledati. Sa tim fenomenom se mora trenutno živjeti, ali se on treba postepeno kanalisati, isključivo u svrhu progresa zasnovanog na sistemu vrijednosti. Kao rezultat otvorenog akademskog i naučnog razgovora, treba donijeti mapu kratkoročnih i dugoročnih rješenja, uz obavezivanje kreatora zakonskih okvira da iste formaliziju. U okviru internih akademskih pravila i upustava pojedine mjere i kriterijumi poboljšanja se mogu brzo primijeniti.

Hyper-publishing and Scientometrics - Two Sides of the Coin

Publishing is as old as the written word. Throughout history, it has had a positive effects on the development of civilization. Apart from the congenital and acquired potential of man to write and publish, the publishing was dependent on additional factors such as letters and communication/printing technologies. Economically speaking, the publishing was not profitable for the author himself/herself, but if it served the purposes of propaganda, manipulation and support of the current political structures. Mainly, it was the privilege of a small number of the social elite, who earned this honor through their talent, and primarily through theirs persistent, long-term efforts and personal sacrifices. What is the situation today? The author's mind has changed a little. A letter, too. With the development of computer technology, telecommunications, the Internet and artificial intelligence, the publishing, or simply the writing, is booming. Everyone is given the opportunity to write about whatever they

want, whenever they want and wherever they want. Combined with bureaucratic arrangements, marketing and financial manipulations, the writing (publishing) becomes quite a profitable activity, especially for the scientific and research population. The result is a gigantic amount of the written material, so grown, that "you can't see the mountain from the forest", that the quantity has completely suppressed the quality, and that the problem is to find valuable records for yourself in a pile of superficiality and worthlessness. In science and education, such the situation is reaching epidemic proportions.

In this presentation, the author elaborates his opinion on how hyper-publishing in the field of science and research destroys its original character. What are the consequences of such a phenomenon? Can the quality of the scientific research work of an individual or an institution be measured by a simple count and formal qualification? What is scientometrics, from today's point of view? How did the phenomenon of hyper-publishing and scientometrics become an example of a circular economy or a specific kind of ecosystem? What is the capital of credibility? How does the hyper-publishing and banalization of scientometrics affect small and developing countries? Who are the idlers within research community, how they are work? Examples of hyper-publishing and related frauds.

Generally seen, the conclusion of the presentation is that the scientific and educational community must face the given problem and deal with its negative consequences. Simple detection and highlighting of the problem is not enough, but it must be understood in the context of cause-and-effect processes and analytically approached. This phenomenon has to be lived with at the moment, but it should be channeled gradually, exclusively for the purpose of progress, based on the system of the values. The map of the short-term and long-term solutions should be adopted, as the result of an open academic and scientific discussion. The policy makers should be obligated to formalize the consensus of research community. Within the internal academic rules and instructions, certain measures and improvement criteria can be quickly applied.

PATRYK DZIUROSZ-SERAFINOWICZ

Fakultet društvenih nauka, Univerzitet u Gdanjsku, Poljska /
Faculty of Social Sciences, University of Gdańsk, Poland

Evidence Gathering and Decision Theories

Evidence gathering is part and parcel of any reliable inquiry. Rational scientists confirm or falsify hypotheses in light of collected evidence. Moreover, the success of our decisions depends, to a large extent, on the way the world is. And we can only find out how the world is by gathering more evidence and revising our beliefs in light of it. But is it always pragmatically rational to collect evidence, even if this evidence is available for free? In this talk, I show that two leading decision theories, evidential and causal decision theory, answer this question in a different way. In particular, I show that these decision theories may allow for situations where it is pragmatically rational to avoid freely available evidence, but they also significantly disagree on what those situations are.

TONĆI KOKIĆ

Filozofski fakultet, Univerzitet u Splitu, Hrvatska /
Faculty of Humanities and Social Sciences, University of Split, Croatia

Jaina atomism: Key terms

Some of the a priori knowledge of ancient philosophies turned out to be incorrect, for example, Aristotle's cosmological concepts or some of his biological functional explanations. However, some of the ancient ideas turned out to be right, and one of these proven correct broad assumptions of ancient systems of thought is the atomistic structure of the cosmos. In ancient India, atomistic assumptions were extensive and rich in content and could be found in all Āstika (āsti-ka) schools, especially in Vedānta (Upaniṣadic tradition). On the other side, in Nāstika or heterodox line of thinking, the Jaina (meta)physics extensively and thoroughly analyzed the fundamental concepts of the structure of reality: dravya (substance, formerly sat or tattva - reality or existence), pudgala (matter) and paramāṇu (atom). The concept of dravya is always connected with qualities, which means there are few distinct substances, five or six of them. Names of the five substances contain the determination of existence (āsti) and extension (kāya), e.g., pudgalāstikāya is the concept that seems almost identical to the modern physical understanding of matter and energy. At the same time, paramāṇu is very close to the modern interpretation of the atom. Suppose some of Jaina concepts are proven real. In that case, it is possible that some others could also be considered valuable for deep research because they could forecast new insight into the nature of reality.

SONJA TOMOVIĆ ŠUNDIĆ

Fakultet političkih nauka, Univerzitet Crne Gore, Crna Gora /
Faculty of Political Science, University of Montenegro, Montenegro

Paralelizam između savremene filozofije nauke i Kantove filozofije

U radu se raspravljaju sličnosti i razlike izmedu osnovnih pretpostavki savremene filozofije nauke i Kantovog transcendentalizma. Razumijevanje apriornog kategorijalnog aparata može da osvijetli problem postojanja univerzalnih stavova nauke, naučnih iskaza i hipoteza, ali da bude i povod za promišljanje o aktivnoj ulozi naučnih pojmova u organizaciji iskustva kao i stanovišta o njihovoj podložnosti promjenama. U tom kontekstu suprotstavljanjem dvije paradigme u savremenoj filozofiji nauke, apriorizma i konvencionalizma, nastoji se utvrditi važan doprinos Kantovog filozofskog mišljenja.

Parallelism between Contemporary Philosophy of Science and Kant's Philosophy

The paper discusses the similarities and differences between the basic assumptions of contemporary philosophy of science and Kant's transcendentalism. Understanding the a priori categorical apparatus can shed light on the problem of the existence of universal attitudes of science, scientific statements and hypotheses, but also be a reason to reflect on the active role of scientific concepts in the organization of experience as well as the viewpoint on their susceptibility to change. In this context, by contrasting two paradigms in the contemporary philosophy of science, apriorism and conventionalism, an attempt is made to determine the important contribution of Kant's philosophical thought.

IGOR PETROVIĆ, TATIJANA DLABAČ, VERA KAPETANOVIĆ

Pomorski fakultet, Univerzitet Crne Gore, Crna Gora / Faculty of Maritime Studies, University of Montenegro, Montenegro

Adoption of Unique Aspects of Competence in Maritime Education: A Case Study of Montenegro

For the education system, it is of utmost importance to understand and comprehend the way in which certain competencies are achieved. The education of seafarers is prescribed by the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW) of 1978. The convention describes minimum standards related to training, certification, and watchkeeping that each member state must implement, ideally exceeding these minimums. To facilitate implementation, the STCW Code was adopted. However, achieving certain competencies is a complex and demanding process.

Competence is defined as the ability and skill to accomplish a task, a specialized area of knowledge, or the necessary skill to perform a specific job. Competence consists of following domains: cognitive (knowledge), psychomotor (skill), and affective (attitude and behaviour). Maritime operations, which form the backbone of global trade, have unique characteristics as they take place in a specialized environment where seafarers are often isolated, far from services that can offer assistance in exceptional circumstances. It is important to emphasize that working in an environment such as a ship significantly depends on motivation, mental capability and stability, as well as job security, which seafarers rarely have. Seafarers frequently change their working environment, necessitating rapid adaptation to new conditions. This unique aspects of seafarers' competence are recognized by the International Maritime Organization (IMO), which adopted the STCW.

This paper will present the specifics of competence in maritime education. It will outline the STCW Convention's recommended methods for assessing cognitive, psychomotor, and affective domains, with special attention to the often-neglected affective domain. Despite extensive research, practical use of affective assessment in maritime operations remains limited. The paper will also explore the integration of these unique aspects in the maritime education in Montenegro, highlighting achievements and areas for improvement, and emphasizing the need for psychometricians in the education process.

JELENA LATINOVIĆ, BOGOLJUB KANDIĆ, NEDELJKO LATINOVIĆ

Biotehnički fakultet, Univerzitet Crne Gore, Crna Gora / Biotechnical Faculty, University of Montenegro, Montenegro

Primjer izrade naučnog rada iz oblasti bolesti biljaka i njihovog suzbijanja

Bolesti biljaka imaju poseban značaj u poljoprivredi, jer mogu smanjiti ili potpuno uništiti prinos ili dovesti do smanjenja kvaliteta biljnih proizvoda. Njih proučava nauka koja se naziva fitopatologija. Ova nauka bavi se utvrđivanjem uzroka bolesti (patogeni mikroorganizmi – biotički faktori i uslovi spoljašnje sredine – abiotički faktori), mehanizmom nastanka oboljenja, međusobnim odnosom prouzrokovača bolesti i biljke domaćina i mogućnostima zaštite od bolesti. Terenske aktivnosti čine osnovu istraživačkog rada, tokom kojih se sakupljaju uzorci biljnog materijala sa bolesnih biljaka, koji će biti predmet daljih laboratorijskih analiza. U zavisnosti od teme, istraživač dalje bira odgovarajuću metodologiju. Prema dijagnostičkim protokolima, obavlja se izolacija i identifikacija različitih mikroorganizama (najznačajniji su gljive, bakterije i virusi). Veoma značajna grupa biljnih bolesti su mikoze, čiji su prouzrokovači fitopatogene gljive. Metodologija proučavanja gljiva koje izazivaju bolesti kod biljaka je raznovrsna. Početak identifikacije zasniva se na detaljnom proučavanju simptoma bolesti na različitim biljnim organima. U laboratoriji se, zatim, pristupa mikroskopiranju ili izolaciji gljiva u zavisnosti od njihove vrste. Izolacija određenih vrsta gljiva se obavlja na hranljivim podlogama, na koje se nanose fragmenti zaraženog biljnog tkiva. Veoma značajan postupak je provjera patogenosti, gdje se proučavanom gljivom vještački zaražava zdrava biljka u cilju dobijanja istih simptoma bolesti koji su primijećeni u prirodnoj infekciji. U identifikaciji od velikog značaja su i molekularne metode, posebno metoda lančane reakcije polimeraze (PCR), kojom se ispituje građa genoma gljiva prouzrokovača bolesti. Nakon identifikacije biljnih patogena, dalja istraživanja se usmjeravaju na ispitivanja mo-

gućnosti njihovog suzbijanja. Nauka koja se bavi proučavanjem suzbijanja štetnih organizama u poljoprivredi naziva se fitofarmacija. Za zaštitu biljaka od gljiva prouzrokovača bolesti koriste se fungicidi, koji mogu biti hemijskog i biološkog porijekla. Proučavanje mogućnosti suzbijanja fitopatogenih gljiva sprovodi se u laboratorijskim i terenskim uslovima uz korišćenje statističke obrade radi dobijanja pouzdanih rezultata.

An Example of a Scientific Paper Preparation in the Field of Plant Diseases and their Control

Plant diseases have a special importance in agriculture, because they can reduce or completely destroy the yield or lead to a decrease in the quality of plant products. They are studied by a science called phytopathology. This science deals with determining the cause of diseases (pathogenic microorganisms - biotic factors and environmental conditions - abiotic factors), the mechanism of disease occurrence, the mutual relationship between the cause of the disease and the host plant, and the possibilities of protection against diseases. Field activities represent the basis of research work, during which samples of plant material from diseased plants are collected, which will be the subject of further laboratory analyses. Depending on the topic, the researcher further chooses the appropriate methodology. According to diagnostic protocols, the isolation and identification of different microorganisms is performed (the most important are fungi, bacteria and viruses). A very important group of plant diseases are mycoses, which are caused by phytopathogenic fungi. The methodology of studying fungi that cause diseases in plants is diverse. The beginning of identification is based on a detailed study of disease symptoms on different plant organs. Microscopy or isolation of fungi, depending on their species, is then performed in the laboratory. Isolation of certain fungal species is carried out on nutrient media, on which fragments of infected plant tissue are applied. A crucial procedure is the pathogenicity check, where a healthy plant is artificially infected with the studied fungus in order to obtain the same symptoms of the disease that are observed in natural infection. Molecular methods are also of great

importance in identification, especially the method of polymerase chain reaction (PCR), which is used to examine the structure of the genome of the disease-causing fungi. After the identification of plant pathogens, further research is focused on testing the possibility of their control. The science that deals with the study of the control of harmful organisms in agriculture is called phytopharmacy. Fungicides are used to protect plants from disease-causing fungi, which can be of chemical or biological origin. The study of possibilities in control of phytopathogenic fungi is carried out in laboratory and field conditions with the use of statistical data processing in order to obtain reliable results.

ПРЕДРАГ Р. ЖИВКОВИЋ, НАТАША КРИВОКАПИЋ

Филозофски факултет, Универзитет Црне Горе, Црна Гора / Faculty of Philosophy, University of Montenegro, Montenegro

Наука у идеолошкој одбрани трансхуманизма

Рад којим анализирамо садржаје трансхуманизма а тиме и „софистициране моделе“ друштвених и природних наука у стварању овог феноменолошког стања за које се испоставило, „колико је технолошки и медицински супериорно“, (издвојићемо исказе наших саговорника) толико је и етички проблематично јер не нуди „миран сан“ савременом човјеку већ оправдану несаницу у губитку свих оних успомена које су потврђивале митски капитал његове прошлости, рањивост његове садашњости и хазардерство његове будућности. Губитак његове „антрополошке испостаси“ под утицајем трансхуманистичких форми, представља задатак аутора да на основу досадашњих истраживачких резултата који су добијени у оквирима социолошких и филозофских налаза, представе оне етичке параметре у којима је затекнута „декаденција савремене науке“. О том историјском одрицању од религиозне а касније и научне етике и од оне епистемологије која би била усмјерена ка човјеку с циљем једног хуманистичког побољшања његове заједнице о којима смо писали у такорећи почетним трансхуманистичким „бревијарима и етидама“, како смо их и ословили, у овом „рукопису“ ћемо се трудити, да на један схватљив али не и на демагошки начин, представимо и епистемолошки дознамо границе ако оне уопште и постоје, „између савремене науке, политике и идеологије“, како то тврди значајан круг мислилаца. Видјећемо да све више савремених политичких идеологија инкорпорирају начела трансхуманизма, представљајући исте као неодвојив дио цивилизације којом управљају наслеђени либерални канони који су данас маскирани у парадигмама цивилизацијског успона. Упоређујући савремене студије које се односе на феномен још радикалнијег „биополитичког вампиризма“ и тиме опомињу човјечанство да се налази у „нишама трансхуманизма“, на којем

су ревносно радиле како природне тако и друштвене науке, овај рад ће као закључни оквир понудити могућно превазилажење те „антихуманистички алијениране службе“.

Science in the Ideological Defence of Transhumanism

The paper aims to analyse the contents of transhumanism, and thus “the sophisticated models” of social and natural sciences in creating this phenomenological state, which has turned out to be “as technologically and medically superior” (we will highlight the statements of our interlocutors) as it is ethically problematic because it does not offer ”a peaceful sleep” to modern individuals but justified insomnia in the loss of all those memories that confirmed the mythical capital of their past, the vulnerability of their present, and the hazardousness of their future. Losing their “anthropological hypostasis” under the influence of transhumanist forms represents the authors’ task to present, based on the existing research results obtained within the frameworks of sociological and philosophical findings, the ethical parameters in which “the decadence of modern science” is encountered. In the initial transhumanist “breviaries and etudes”, as we named them, we wrote about this historical renunciation of religious and later scientific ethics and epistemology aimed at individuals with the goal of a humanistic improvement of their community. In this “manuscript”, in an understandable but not demagogic way, we will endeavour to present and epistemologically get to know the boundaries, if they even exist, “between modern science, politics, and ideology”, as claimed by a significant circle of thinkers. We will see that more and more contemporary political ideologies incorporate the principles of transhumanism, presenting them as an inseparable part of the civilization governed by inherited liberal canons that are today masked in the paradigms of civilizational rise. By comparing contemporary studies that refer to the phenomenon of even more radical “biopolitical surveillance” and thus warn humanity that it is in “the niches of transhumanism”, on which both natural and social sciences have worked diligently, this paper will offer a possible overcoming of that “anti-humanist alienated service” as a concluding framework.

ДУШАН КРЦУНОВИЋ

Филозофски факултет, Универзитет Црне Горе, Црна Гора / Faculty of Philosophy, University of Montenegro, Montenegro

Платоново схватање науке као „вјероватне приче“

Платонов Тимај једно је од најутицајнијих античких дјела из области науке о природи, философије природе и философије науке. Ово дјело спада у жанр познат под називом peri physeos hystoria, односно „истраживање о природи“ и представља Платонов одговор на цијелу предсократовску философску и научну традицију, али и антиципира модерну научну слику свијета. Платоново приказ поријекла, структуре и функционисања физичког свијета комбинује телеолошки и механицистички модел објашњења. У ту сврху Платон користи математички приступ у разумијевању природе који је нашао снажан одјек у савременим наукама. Но, често се губи из вида да науци о природи, без обзира на њену „математизацију“, Платон даје специфичан епистемолошки статус, називајући је „вјероватном причом“ (eikos mythos) и „вјероватним говором“ (eikos logos). Због онтолошког статуса предмета који проучава, а то је физичка стварност, наука о природи не може да претендује на знање које превазилази ознаку „вјероватног“ (eikos), подређујући је философији. Али, шта Платон подразумијева под појмом eikos? У раду ће бити пружен један од „вјероватних“ одговора на наведено питање, слиједећи античке, али и модерне интерпретације Тимаја.

Plato’s Understanding of Science as a “Probable Story”

Plato’s Timaeus is one of the most influential ancient works in the field of natural science, philosophy of nature and philosophy of science. This work belongs to the genre known as pery physeos hystoria, i.e. “inquiry into nature” and represents Plato’s response to the entire pre-Socratic philosophical and scientific tradition, but also anticipates the modern scientific picture of the world. Plato’s account of the origin, structure and functioning of the physical world

combines a teleological and a mechanistic model of explanation. For this purpose, Plato uses a mathematical approach to understanding nature that has found a strong echo in modern science. But it is often lost sight of that, regardless of its "mathematization", Plato gives a specific epistemological status to the science of nature, calling it a "likely account" (eikos mythos) and "likely speech" (eikos logos). Due to the ontological status of the object it studies, which is physical reality, the science of nature cannot claim knowledge that goes beyond the label of "probable" (eikos), subordinating it to philosophy. But what does Plato mean by the term eikos? The paper will provide one of the "probable" answers to the above question, following ancient and modern interpretations of Timaeus.

TATIJANA DLABAČ, MILENA DŽEVERDANOVIĆ PEJOVIĆ, ILIJA KNEŽEVIĆ, NEMANJA PUDAR

Pomorski fakultet, Univerzitet Crne Gore, Crna Gora /
Faculty of Maritime Studies, University of Montenegro, Montenegro

Korišćenje softvera za automatsko citiranje referenci – studija slučaja na primjeru Pomorskog fakulteta Kotor

Za studente svih nivoa obrazovanja, kao i za sve istraživače je od izuzetnog značaja usvajanje znanja vezanog za pravilno citiranje korišćene literature u procesu izrade seminarskih, završnih i naučnih radova. Kroz ovaj proces se studenti izgrađuju i možemo slobodno reći da počinje njihovo sazrijevanje u naučno-istraživačkom smislu. S obzirom da je za kvalitetno pisanje rada neophodno istraživanje i iščitavanje brojne naučne i stručne literature, od velike je važnosti da studenti i istraživači koriste softvere za automatsko generisanje referenci. Ovi softveri zapravo predstavljaju specijalizovane baze podataka koje sami korisnici prave. Ulazne veličine za ovakve baze su reference, a izlazne popis referenci koje korisnik traži u odnosu na traženi stil citiranja koji zahtjeva publikacija. Bitno je istaći da je promjena stila citiranja veoma jednostavna kompjuterska operacija, kao i samo pretraživanje istraživačke baze.

U radu će biti prikazani neki od softvera za automatsko citiranje referenci koje koriste studenti i istraživači na Pomorskom fakultetu Kotor Univerziteta Crne Gore, kao što su *Zotero* i *Mendeley*. Cilj ovog rada je da ukaže na značaj korišćenja ovih softvera sa posebnim osvrtom na studente master studija koji u okviru predmeta Metodologija naučno istraživačkog rada stiču znanje o važnosti propisnog navođenja korištenih izvora, i mogućnostima naprednog pretraživanja bibliografskih jedinica, posebno u eri digitalizacije. Takođe, u radu će se prikazati rezultati istraživanja o poznavanju upotrebe softvera za automatsko citiranje od strane studenata master i doktorskih studija Pomorskog fakulteta Kotor. Pedagoške implikacije rada se posebno odnose na mogućnost budućih istraživanja i na drugim jedinicama Univerziteta Crne Gore, obzirom na aktuelnu politiku Univerziteta

koja teži podići nivo akademske svijesti u oblasti upravljanja informacijama i pravilnog korišćenja intelektualne građe.

Utilizing Software for Automatic Reference Citing – A Case Study of the Faculty of Maritime Studies Kotor

Understanding proper literature citation is essential for students at all study levels, as well as for researchers in the process of writing seminar, final and scientific papers. This process is vital for the development and intellectual growth of students in a scientific and research context. Knowing that conducting research and reading numerous scientific literature resources are crucial for producing high-quality papers, it is vital that students and researchers utilize software for the automatic production of references. These software tools are specialized databases that users create themselves. The input data for such databases are references, and the output is a list of references tailored to the need of the user, based on the required citation style. It is worth noting that changing citation styles is a simple computer operation, similar to database searching.

The paper will present specific examples of software used for automatic citation of references used by students and researchers at the Faculty of Maritime Studies Kotor of the University of Montenegro, such as *Zotero* and *Mendeley*. The aim of this paper is to emphasize the significance of using these software tools with particular focus on master's students who, through the course Methodology of Scientific and Research work, acquire the knowledge about the importance of proper citing of the sources used, and advanced searching of bibliographic units, especially in the digital age. Also, the paper will present findings of the research on the knowledge and the use of software for automatic citation by master's and doctoral students at the Faculty of Maritime Studies Kotor. The pedagogical implications of this work are closely related to the potential for future research at other departments within the University of Montenegro, aligning with the University's current policy aimed at enhancing academic awareness in information management and the proper utilization of intellectual material.

ДУШАН ИГЊАТОВИЋ

Филозофски факултет, Универзитет Црне Горе, Црна Гора / Faculty of Philosophy, University of Montenegro, Montenegro

Да ли су предсократовци зачетници научне мисли?

Питање „да ли су Грци изумјели науку“ покренуло је дугу и комплексну научну дебату која није довела до једногласних одговора и рјешења, али је зато обухватила различите дисциплине и привукла пажњу историчара науке, философа, научника и класициста. По мишљењу већине истраживача, предсократовци се могу сматрати родоначелницима научне мисли, будући да су поставили камен темељац за оно што ће на крају еволуирати у модерну науку. Ипак, грчка протонаука, за разлику од савремене науке, започиње свеобухватним, фундаменталним питањима о природи и поријеклу универзума, а не конкретним запажањима или детаљним истраживањима. Овај философски приступ настојао је да разоткрије природу стварности и космоса путем чистог расуђивања, тежећи интерно кохерентним и екстерно компатибилним шемама, без прибјегавања експерименталној валидацији, што је у оштрој супротности са емпиријском строгошћу модерне науке.

Значајна препрека њиховом напретку било је одсуство јединственог методолошког консензуса, који се усталио тек током научне револуције. Сваки предсократовац служио се произвољним скупом епистемолошких алата, што је довело до разноликих приступа у разумијевању природе. Упркос методолошким разликама, њихови интелектуални напори оставили су дубок и трајан утицај, посебно у областима попут астрономије, утичући на научну мисао све до данашњих дана.

Доприноси предсократоваца, упркос изостанку савремених научних и технолошких алата, показали су изузетну интелектуалну оштрину и јасноћу, заслужујући дивљење савремених научника. Са друге стране, за разлику од спекулативне и често статичне природе предсократских идеја, модерну науку карактеришу

њене пробне, еволуирајуће хипотезе, које су подвргнуте ригорозном тестирању и континуираном усавршавању, чиме се подстиче прогресивно акумулирање знања.

Коначно, постоји круцијална разлика у мотивима бављења науком. Хеленски философи су првенствено тежили да схвате суштину стварности и човјека, док савремена наука, између осталог, има за циљ контролисање и експлоатацију природе. Упркос овим разликама, философија природе предсократоваца, коју је Ф. Бекон сматрао „Великом мајком наука", породила је различите специјализоване науке које су на крају сазреле и до краја 19. века постале независне научне дисциплине. Тиме наслеђе предсократоваца опстаје, подупирући развој и процват савремене научне мисли.

Are the pre-Socratics the Originators of Scientific Thought?

The question "Did the Greeks invent science?" has sparked a long and complex scientific debate that has not led to unanimous answers and solutions but has encompassed various disciplines and attracted the attention of historians of science, philosophers, scientists, and classicists. According to most researchers, the Presocratics can be considered the founders of scientific thought, as they laid the foundation for what would eventually evolve into modern science. However, Greek proto-science, unlike contemporary science, begins with comprehensive, fundamental questions about the nature and origin of the universe rather than specific observations or detailed investigations. This philosophical approach sought to uncover the nature of reality and the cosmos through pure reasoning, striving for internally coherent and externally compatible schemes without resorting to experimental validation, which is in sharp contrast to the empirical rigor of modern science.

A significant obstacle to their progress was the absence of a unified methodological consensus, which only became established during the scientific revolution. Each Presocratic used an arbitrary set of epistemological tools, leading to diverse approaches in understand-

ing nature. Despite methodological differences, their intellectual efforts left a deep and lasting impact, particularly in areas such as astronomy, influencing scientific thought to this day.

The contributions of the Presocratics, despite the lack of modern scientific and technological tools, demonstrated exceptional intellectual sharpness and clarity, earning the admiration of contemporary scientists. On the other hand, modern science is characterized by its tentative, evolving hypotheses, subjected to rigorous testing and continuous refinement, fostering the progressive accumulation of knowledge, unlike the speculative and often static nature of pre-Socratic ideas.

Finally, there is a crucial difference in the motives for engaging in science. Hellenic philosophers primarily sought to understand the essence of reality and humanity, while contemporary science, among other things, aims to control and exploit nature. Despite these differences, the natural philosophy of the Presocratics, which F. Bacon considered the "Great Mother of Sciences," gave birth to various specialized sciences that eventually matured and, by the end of the 19th century, became independent scientific disciplines. Thus, the legacy of the Presocratics endures, supporting the development and flourishing of modern scientific thought.

BOGDANA STAMENKOVIĆ JAJČEVIĆ

Filozofski fakultet, Univerzitet u Beogradu, Srbija /
Faculty of Philosophy, University of Belgrade, Serbia

Darwin's *Entangled* Bank: The Relations Between Organisms and Natural Environment

As Thomas Kuhn (1922–1996) notes, the history of science encountered a few massive revolutions, and in the 19th century, it was enriched with yet another revolution—Darwin's theory of evolution (Kuhn, 1996). This theory was famously published under the title On the Origin of Species in 1859. It is filled with various prominent hypotheses, arguments, and metaphors. One of the distinguished metaphors, known as the Entangled Bank metaphor, can be found at the end of the Origin. Here, Darwin writes:

> It is interesting to contemplate a tangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other and dependent upon each other in such a complex manner, have all been produced by laws acting around us. These laws, taken in the largest sense, being Growth with Reproduction; Inheritance, which is almost implied by reproduction; Variability, from the indirect and direct action of the conditions of life and from use and disuse; a Ratio of Increase so high as to lead to a Struggle for Life, and as a consequence to Natural Selection, entailing Divergence of Character and the Extinction of less-improved forms. Thus, from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows (Darwin 2009: 429).

Contemporary scholars of the Darwin Industry argue that this metaphor captures the picture of Darwinian nature, where all phenomena are interconnected by various relations revealed through the

„war of nature“ and struggle for survival (Gould and Lloyd 1999; Storch, Marquet, Gaston 2005; Kwa 2010; Kefi et. al. 2016; Fromhage and Houston 2022). Natural species are „dependent upon each other in such a complex manner,“ and since their variability relies on „the indirect and direct action of the conditions of life,“ it seems that organisms and the natural environment are also interconnected. Thus, the Entangled Bank metaphor seems to reveal the holism of Darwin's theory. And this, we may say, holistic Darwinism is favourable by scholars who emphasise Darwin connection to German Romanticism (i.e., Richards 1986, 1987, 1992, 2003, 2004, 2008, 2013; Ruse and Richards 2008, 2017; Beer 2009; Greif 2015; Faflak 2017; Lansley 2018; Liu 2022).

My aim in this paper is to evaluate such a view. I explore Darwin's theory of evolution and analyse his understanding of the agency of organisms and the natural environment in order to explore the relations between these two domains. As Darwin's Entangled Bank metaphor poetically expresses, the organisms (or natural species) are mutually dependent on each other, whilst their variations result from the direct and indirect action of „the conditions of life,“ i.e., the natural environment. I show that these relations are grounded in Darwin's understanding of the struggle for survival, which refers to the „war of nature“ arising due to the changing conditions of the natural environment (e.g., free space, nutrition, etc.). Put differently, my analysis shows that the natural environment represents an active cause of change in organisms. Nontheless, natural species remain something more than just passive agents incapable of causing any changes in their environment. Whilst this may be easily overlooked in the Origin due to Darwin's narrative, I show that the causal activity of organisms is clearly captured by his observation of beavers building a dam and, thus, modifying their ecosystem in order to survive. If naturalistic holism presupposes the existence of mutual relations between all organic and inorganic natural phenomena, then Darwin's famous Entangled Bank metaphor and complete theory of evolution may offer a holistic interpretation of nature.

TATJANA VUJOVIĆ

Filozofski fakultet, Univerzitet Crne Gore, Crna Gora /
Faculty of Philosophy, University of Montenegro, Montenegro

Nedostaci onlajn ankete u naučnim istraživanjima

Osnovni cilj rada bio je da se sagledaju nedostaci onlajn ankete u naučnim istraživanjima, kao i da se ispitaju strategije za poboljšanje stope odgovora u anketama. Dosadašnja istraživanja pokazuju da su stope odgovora niske. Onlajn ankete zahtijevaju respektabilnu stopu odgovora, jer se stopa odgovora često posmatra kao važan kriterijum za procenu kvaliteta ankete. Sproveli smo integrativni pregled studija iz oblasti obrazovanja koje su do sad koristile ovaj metod, a koje su objavljene u periodu od 2017. do 2023.godine. Istraživačke studije su potrebne da bi se ispitalo da li su različite strategije koje koriste istraživači sa namjerom da poboljšaju stope odgovora prihvatljive za potencijalne učesnike i da se procijeni potencijalni sinergistički efekat tj. kombinacija nekoliko strategija identifikovanih u ovom pregledu. Rezultati uključenih studija pokazuju da obavještenje putem e-mail pošte ili telefona, pozivnica putem e-mail pošte, 2 podsjetnika, i podsticaji za lutriju poboljšavaju stope odgovora u onlajn anketama.

Disadvantages of Online Surveys in Scientific Research

The main goal of the paper was to look at the shortcomings of online surveys in scientific research, as well as to examine strategies for improving survey response rates. Previous research shows that response rates are low. Online surveys require a respectable response rate, as response rate is often seen as an important criterion for assessing the quality of a survey. We conducted an integrative review of studies in the field of education that used this method until now, and which were published in the period from 2017-2023. Research studies are needed to examine whether the different strategies used by researchers to improve response rates are acceptable to potential participants and to assess the potential

synergistic effect ie. a combination of several strategies identified in this review. The results of the included studies show that e-mail or telephone notification, e-mail invitations, 2 reminders, and lottery incentives improve response rates in online surveys.

MARA ŠĆEPANOVIĆ[1], VLADIMIR DREKALOVIĆ[2]

[1] Prirodno-matematički fakultet, Univerzitet Crne Gore, Crna Gora /
Faculty of Natural Science and Mathematics
University of Montenegro, Montenegro

[2] Filozofski fakultet, Univerzitet Crne Gore, Crna Gora /
Faculty of Philosophy, University of Montenegro, Montenegro

Od teorije do eksperimenta i nazad

Od trenutka kad je čovjek podigao pogled ka nebu u pokušaju da se što tačnije orijentiše pa sve do današnjih dana, nesmanjenom žestinom, nekad sa manjim, nekad sa većim uspijehom , traži tačnije načine da opiše zakonitosti svega što nas okružuje kao i nas samih. Još od starih civilizacija počinje prvo, za sada otkriveno, računanje vremena i istraživanja svemira. Tada, kao pokušaj čitanja božanskih zapisa koje je omogućavalo predviđanje budućnosti, preko starogrčkih mislilaca pa do danas, zagledani duboko u prošlost pokušavamo odgonetnuti sveti gral fizike. Fizika, kao posebna disciplina, počinje da se razvija tek kada su naučnici, uz teorijske pretpostavke, shvatili da im je za objašnjenje svega, neophodno smisliti eksperiment koji bi bio neopoziv dokaz da im je teorijska pretpostavka tačna. Takođe, nagli zamah u razvoju dobija, kada počinje da preovladava ideja posmatranja posljedica djelovanja prirode u cilju tumačenja zakona tj uzroka koji su do toga doveli. Eksperiment je najjednostavnije objasniti kao kontrolisano simuliranje dešavanja u prirodi u smislu dobijanja empirijskih rezultata koji, opet objašnjeni teorijom i zapisani u vidu matematičkih izraza, predstavljaju fizički zakon u domenu njegovog djelovanja. U ovom radu će se preko nekoliko ključnih eksperimenata, po izboru autora, približiti razvoj naučnog i filozofskog promišljanja koji su doveli do daljeg otkrivanja prirodnih zakonitosti.

From Theory to Experiment and Back

From the moment when man raised his eyes to the sky, in an attempt to orientate himself as accurately as possible, until today, with undiminished ferocity, sometimes with less, sometimes with greater success, he searches for more accurate ways to describe the laws of everything that surrounds us as well as ourselves. Since ancient civilizations, the first, so far discovered, calculation of time and exploration of space begins. On the beegining as an attempt to read the divine records that made it possible to predict the future, through the ancient Greek thinkers and until today, looking deep into the past, we try to decipher the holy grail of physics. Physics, as a special discipline, began to develop only when scientists, along with theoretical assumptions, realized that in order to explain everything, it was necessary to come up with an experiment that would be irrevocable proof that their theoretical assumptions were correct. Also, a sudden momentum in development is gained, when the idea of observing the consequences of the action of nature in order to interpret the laws, ie the causes that led to it, begins to prevail. The experiment can be explained in the simplest way as a controlled simulation of events in nature in the sense of obtaining empirical results which, again explained by theory and written down in the form of mathematical expressions, represent a physical law in the domain of its action. In this paper, through several key experiments, selected by the authors, we will bring closer the development of scientific and philosophical thinking that led to the further discovery of natural laws.

ДРАГА БОЈОВИЋ

Филолошки факултет, Универзитет Црне Горе, Црна Гора / Faculty of Philology, University of Montenegro, Montenegro

Интердисциплинарни приступ изучавањима у лексикологији и фразеологији српског језика

Лексичко благо једног језика, па и српског, у вези је са историјом, географијом, етнологијом, фолклористиком, филозофијом, психологијом и другим научним гранама, па је за стицање цјеловитог знања из области лексикологије неопходнан интегративни приступ, поготово одређеним темама.

Лексикологија у ужем смислу проучава лексему, а у ширем фразем, а и једна и друга јединица су подједнако изазовне за интердисциплинарно проучавање.

Теоријска разматрања о интердисциплинарности неопходној за ову област у раду ћемо поткријепити одговарајућим примјерима. Све то указује да аутентичан тимски рад може дати научни резултат који би настао синтезом научних виђења, и могао би да буде подједнако релевантан у свакој области проучавања.

Interdisciplinary Approach to Lexicology and Phraseology Studies of the Serbian Language

The lexical treasure of any language, including Serbian, is tied to history, geography, ethnology, folkloristics, philosophy, psychology and other branches of science, therefore an integrative approach is necessary for the acquisition of comprehensive knowledge in the field of lexicology.

Lexicology in the narrow sense studies lexemes and in the broader sense it studies idioms, and both units are equally challenging for interdisciplinary study.

In this paper we will give adequate examples supporting theoretical considerations about the interdisciplinarity that is necessary for this

field. All this indicates that authentic teamwork can give a scientific result that would be made through the synthesis of scientific views and which could be equally relevant in any field of study.

DARKO BLAGOJEVIĆ

Filozofski fakultet, Univerzitet Crne Gore, Crna Gora /
Faculty of Philosophy, University of Montenegro, Montenegro

Vitgenštajn, Liotar i Haksli: subverzivni misaoni put

Egalitaristički princip jezičkih igara kod Ludviga Vitgenštajna služi kao zamajac za Liotarovu kritiku metanarativa. Naime, Vitgenštajnove jezičke igre predstavljaju jedan od instrumenata kojim Liotar ruši metanaracije, pogotovo one koje dolaze iz dimenzije nauke. Pošto svaka jezička igra predstavlja zaseban jezički sistem, nijedna od njih nema poseban ontološki i vrijednosni status. Sa druge strane, Haksli vrši apoteozu narativa koji dolaze iz dimenzije nesvjesnog, što je opet, na neki način, povezano sa egalitarističkim principom jezičkih igara kod bečkog filosofa. Vitgenštajnove neukrotive jezičke igre, Liotarova borba protiv metanarativa i Hakslijeva divinizacija moći nesvjesnog predstavljajuju potencijalni otpor scijentističkoj civilizaciji.

Wittgenstein, Lyotard and Huxley: Subversive Path of Thinking

Egalitarian principle of Ludwig Wittgenstein's concept of language games served as an incentive for Lyotard's critique of metanarratives. Namely, the language games become one of the tools by means of which Lyotard deconstructs metanarratives, particularly those belonging to the field of science. Since every language game represents a separate language system, none of them has a special ontological and axiological status. Aldous Huxley, on the other hand, offers an apotheosis of the narratives that come from the dimension of the unconscious, which is also , in a certain sense, relatable to the idea of the language games proposed by the Viennese philosopher. Wittgenstein's untameable language games, Lyotard's struggle against metanarratives and Huxley's divinization of the power contained in the unconscious can all be read as a resistance against the scientistic civilization.

BOJAN MILUNOVIĆ

Filozofski fakultet, Univerzitet u Beogradu, Srbija /
Faculty of Philosophy, University of Belgrade, Serbia

Kvajetizam, funkcionalizam i deskriptivistička filozofija nauke

Modelima se u naučnoj literaturi naziva veliki broj različitih sistema, od inženjerskih prototipa hidroenergetskih turbina i vinskih mušica korišćenih u biomedicinskim istraživanjima naslednih bolesti, do matematičkih formula za računanje troška proizvodnje grupe resurasa u mikroekonomiji i kompleksnih računarskih simulacija cirkulacije vode u meteorologiji. Savremena deskriptivistička filozofija modelovanja nastoji da opiše, objasni, i katalogizuje načine na koji ovaj heterogeni skup sistema proizvodi znanje, kao i da odgovori na osnovna ontološka i semantička pitanja o prirodi naučnih modela: šta modele, kao vrstu stvari, izdvaja od drugih naučnih sredstava, i koje uslove određena struktura treba da zadovolji kako bi se opravdano nazvala „naučnim modelom". Filozofi ovom zadatku pristupaju iz dve različite perspektive: pozitivne funkcionalističke, koja nastoji da na osnovna pitanja o prirodi modela odgovori analiziranjem njihove funkcije, i negativne kvajetističke, koja praksu modelovanja vidi kao inherentno nekompatibilnu sa bilo kojim projektom analize modela koji pretenduje da bude generalan i obuhvati raznovrsnost sistema koji se u nauci nazivaju „modelima".

U ovom radu ćemo analizirati navedene filozofske strategije, fokusirajući se na izazove koje kvajetizam postavlja funkcionalističkim stanovištima – prvenstveno instancijalizmu i reprezentacionizmu. Rad ima tri osnovna cilja. Ispitaćemo (1) da li je kvajetistička sumnja u mogućnost generalne filozofske analize modelovanja osnovana, i utvrditi (2) da li su (i u kojoj meri) ontološke i epistemološke koncepcije pozitivnih funkcionalističkih pristupa u stanju da odgovore na kvajetističke izazove. Kroz analizu funkcionalističkih pozicija, (3) ekspliciraćemo i zahteve koje realnost naučne prakse nameće deskriptivističkim koncepcijama modelovanja, odnosno karakteristike naučnog modelovanja koje deskriptivisti ne smeju da zanemare

ukoliko žele da sa uspehom opišu realnost ove naučne prakse. Na taj način ćemo doprineti aktuelnom filozofskom projektu „čišćenja terena“ za buduće bavljenje temom naučnog modelovanja, i uneti dodatni red u ovu, kako je Aksel Gelfert (Axel Gelfert) naziva, „čuveno konfuznu i nepreglednu“ granu filozofije nauke.

Quietism, Functionalism and the Descriptive Philosophy of Scientific Modeling

In the scientific literature, the term “model” refers to a broad range of diverse systems, from engineering prototypes and fruit flies to mathematical formulas and computer simulations. The contemporary descriptivist philosophy of modeling seeks to describe, explain, and catalog the ways in which this heterogeneous set of systems produces scientific knowledge. It aims to answer fundamental ontological and semantic questions regarding the nature of scientific models: what distinguishes models from other scientific tools, and which conditions should a structure satisfy in order to be justifiably called a “scientific model”. Philosophers approach this task from two distinct perspectives: *positive functionalist*, which seeks to answer questions about the nature of models by analyzing their function, and negative quietist, which describes the practice of modeling as inherently incompatible with any analysis project that aspires to be general and encompass the variety of systems scientists call “models”.

In this paper, we will analyze both philosophical strategies, focusing on the challenges that quietism poses to functionalist viewpoints – primarily instantiationism and representationalism. The paper has three main objectives. We will examine (1) whether the quietist doubt regarding the feasibility of a general philosophical analysis of modeling is well-grounded, and (2) whether ontological and epistemological conceptions of positive functionalist approaches are able to respond to quietist challenges. Through the analysis of functionalist positions, (3) we will further elucidate upon the requirements that scientific practice places on descriptivist conceptions of modeling, i.e., the characteristics of scientific modeling that descriptivists must not overlook when describing the reality of this scientific

practice. In doing so, we will introduce much needed structure to this “famously confounding” branch of philosophy of science and contribute to the ongoing philosophical mission of “clearing the site” for any future analysis projects centered around the topic of scientific modeling.

VASKO MILATOVIĆ

Mašinski fakultet, Univerzitet Crne Gore, Crna Gora /
Faculty of Mechanical Engineering, University of Montenegro, Montenegro

Objektno orjentisani model instrukcionog dizajna uz primjenu Informacione tehnologije u upravljanu obrazovnim procesom na univerzitetu

Promjene u nastavnoj profesiji su sve učestalije, pa nastavnici danas vrše uloge organizatora, moderatora kurseva i mentora. Svoja znanja prenose studentima preko određenog modela rada. Stoga, postoji potreba za uvođenjem modela i osavremenjivanjem nastavnog procesa uz IT podršku.

Modeli softverskog i instrukcionog dizajna su objedinjeni u jedan nastavni okvir pod imenom Ujedinjeni proces instrukcionog dizajna – UPID.

U ovom radu će biti prikazan nastavni model za elektronsko učenje pod nazivom OO-ADDIE „Saznajni točak“, koji je kreiran na osnovu navedenog UPID okvira i modela softverskog inženjerstva i instrukcionog dizajna za e-učenje. Razvoj novog modela ima za cilj organizaciju efikasnog načina podrške e-učenju studenata na Univerzitetu Crne Gore.

Novi nastavni model OO-ADDIE „Saznajni točak“ za nastavni proces kod e-učenja se sastoji od pet faza: analize, dizajna, razvoja, implementacije i evaluacije; pripada domenu instrukcionog i softverskog dizajna; te se bavi pitanjima efikasnosti nastavnog procesa uz podršku IT-ja.

Object-oriented Model of Instructional Design with the Application of Information Technology in the Management of the Educational Process at the University

Changes in the teaching profession are becoming more frequent; therefore, teachers today perform the function of organizers, course moderators and mentors. They pass on their knowledge to students through a specific work model. Consequently, there is a need to introduce a new model and modernize the teaching process with IT support.

The software and instructional design models are integrated in one teaching framework known as the Unified Process of Instructional Design - UPID.

This paper will present a teaching model for e-learning titled OO-ADDIE "Knowledge Wheel," which was created on the basis of the UPID framework and a model of software engineering and instructional design for e-learning. The development of the new model aims to organize effective e-learning support for students of the University of Montenegro.

The new teaching model OO-ADDIE "Knowledge Wheel," used for the teaching process in e-learning, consists of five phases: analysis, design, development, implementation and evaluation; belongs to the domain of instructional and software design; and addresses efficiency issues of the teaching process with the support of IT.

VLADIMIR PETROVIĆ[1], MARINA ANDRIJEVIĆ[2] PETROVIĆ

[1] *Srednja mješovita škola Golubovci, Crna Gora / Secondary Mixed School Golubovci, Montenegro*

[2] *Osnovna škola „Radojica Perović", Crna Gora / Elementary School "Radojica Perović", Montenegro*

Kratka istorija Higsovog bozona (Božanstvene čestice) Oblast: istorija nauke (fizike)

Od kada je spoznao sebe čovjek se pitao odakle sve potiče i na koji način je sve nastalo. U toj svojoj zapitanosti Demokrit, antički filozof koji je rođen 460 godine prije nove ere, opisivao je atome kao nedjeljive čestice, vječne, nepromjenjive, neuništive i nenastale. Eksperimentalni dokaz Demokritove hipoteze o postojanju atoma morao je sačekati 1909. godinu kada je Raderford osmislio eksperiment kojim je dokazano postojanje pozitivno naelektrisanog jezgra veoma malih dimenzija, dok je ostatak atoma činio „prazan prostor" rezervisan za elektrone. Pokušaj objašnjenja strukture atoma srijećemo u Borovom modelu iz 1913. godine koji će u istoriji fizike ostati kao jedan od posljednjih pokušaja „održavanja" važenja klasične fizike i „izbjegavanja" svih „čudnih" rezultata kvantne fizike.Tokom druge polovine dvadesetog vijeka razvijen je standardni model elementarnih čestica. Piter Higs je 1964. godine, zajedno sa još pet naučnika, predložio teoriju koja objašnjava porijeklo mase elementarnih čestica. Ova čestica nazvana je Higsov bozon ali je u svakodnevnoj komunikaciji postala poznata kao Božija čestice. Eksperimentalni dokaz postojanja Higsovog bozona desio se 2012. godine. Moderna fizika nalazi se u krizi jer još uvijek nije pronađena nijedna čestica tamne materije koja bi trebala da zauzme svoje mjesto u standarndom modelu elementarnih čestica. Takođe, u svijetu mikročestica gravitaciona sila zanemarena je, dok je ova ista sila zadužena za strukturu samog svemira. Da li će naučnici uspjeti u naumu da stvore jednu jedinstvenu teoriju koja će moći objasniti sve fenomene koji su prisutni u mikro i makrosvijetu?

A Brief History of the Higgs Boson (God Particle)

Ever since he came to know himself, man has wondered where everything comes from and how everything came into being. In his questioning, Democritus, the ancient philosopher who was born in 460 BC, described atoms as indivisible particles, eternal, unchanging, indestructible and uncreated. Experimental proof of Democritus' hypothesis about the existence of the atom had to wait until 1909, when Rutherford designed an experiment that proved the existence of a positively charged nucleus of very small dimensions, while the rest of the atom was an "empty space" reserved for electrons. An attempt to explain the structure of the atom can be found in Bohr's model from 1913, which will remain in the history of physics as one of the last attempts to "maintain" the validity of classical physics and "avoid" all the "strange" results of quantum physics. During the second half of the twentieth century, the standard model of elementary particles was developed. In 1964, Peter Higgs, together with five other scientists, proposed a theory that explains the origin of the mass of elementary particles. This particle was called the Higgs boson, but in everyday communication it became known as the God particle. Experimental proof of the existence of the Higgs boson occurred in 2012. Modern physics is in crisis because no dark matter particle has yet been found that should take its place in the standard model of elementary particles. Also, in the world of microparticles, the gravitational force is neglected, while this same force is responsible for the structure of the universe itself. Will scientists succeed in creating a unique theory that will be able to explain all the phenomena that are present in the micro and macro world?

VLADO JOVANOVIĆ

Fakultet političkih nauka, Univerzitet Crne Gore, Crna Gora /
Faculty of Political Science, University of Montenegro, Montenegro

O fenomenologiji samoobmane scijentizma i njegovog postmodernog (i)racionalizma

Ovaj rad analizira fenomenologiju samoobmane unutar scijentizma i njegovog postmodernog (i)racionalizma, sa naglaskom na neke bitne etičke i epistemološke aspekte posredstvom svojevrsnog hermeneutučkog re-konstruktivizma, sa istraživačkim fokusom na dekonstrukcijama neetičkih metodologija koje utiču, ne samo na na formiranje antikulturološke klime unutar naučnih krugova, već i često grade duh scijentističke "svemoći" u savremenom svijetu života. Pri tome se kroz moralno-etičku reviziju istovremeno ukazuje na ekspertize koje dovode do degradacije naučnih zajednica. Dok autoritarizam kao sredstvo unutar scijentizma podvlači primat sopstvenih rigidnih teorijskih okvira nad ostalim metodološkim pristupima, nameće se jedno od centralnih pitanja: da li je revitalizacija naučne zajednice moguća u postmodernom kontekstu, sa zagarantovanom (samo)održivosti u istom? Autor se ne zaustavlja na (samo) kritici nauke i pri-rođenog joj scijentizma, već pruža otvorene podsisteme i moduse koji pružaju potporu senzibilitetu i odgovornosti, kao i kritičkom (novo)profilisanju među naučnim disciplinama. Uz sve navedeno, zbirnim ciklusom mišljenja se u radu želi istaći kako se ove negativne tendencije mogu prevazići navođenjem važnosti praktičkog djelovanja nasuprot teorijskom autoritarizmu.

On the Phenomenology of the Self-Deception of Scientism and Its Postmodern (Ir)Rationalism

This paper analyzes the phenomenology of self-deception within scientism and its postmodern (ir)rationalism, with a focus on certain key ethical and epistemological aspects through a form of hermeneutic re-constructivism. The research emphasizes the deconstruction of unethical methodologies that not only influence the forma-

tion of an anti-cultural climate within scientific circles but also often foster the spirit of scientistic "omnipotence" in the contemporary world of life. Through a moral-ethical review, the paper also highlights the expertise that leads to the degradation of scientific communities. While authoritarianism within scientism underscores the primacy of rigid theoretical frameworks over other methodological approaches, a central question arises: Is the revitalization of the scientific community possible in a postmodern context, with guaranteed (self)sustainability? The author does not stop at merely critiquing science and its inherent scientism but also offers alternative subsystems and modes that support sensitivity and responsibility, as well as critical (re)profiling among scientific disciplines. Alongside all this, the paper aims to highlight how these negative tendencies can be overcome by emphasizing the importance of practical action over theoretical authoritarianism.

MAJA TODOROVIĆ[1], TAMARA ŽIVANOVIĆ[2]

[1] *Javna predškolska ustanova „Dragan Kovačević“, Nikšić, Crna Gora / Public Preschool Institution “Dragan Kovačević”, Nikšić, Montenegro*

[2] *Javna predškolska ustanova „Naša radost“, Herceg Novi, Crna Gora / Public Preschool Institution “Naša radost”, Herceg Novi, Montenegro*

Primjena Dječijih prava u vaspitno-obrazovnim institucijama-komparativna obrada podataka u okviru Akcionog istraživanja

Primijena Dječijih prava u vaspitno-obrazovnim ustanovama, ali i u okviru osnovne društvene ćelije oduvijek predstavlja veliki izazov sa svako društvo. Sa širenjem ideje demokratije ta pojava dobila je na važnosti jer predstavlja jedan od osnovnih uslova nužnih da bi ovakav vid konstruisanja društvenih odnosa mogao da se realizuje u budućnosti u svojoj celini.

Poštovanje Dječijih prava jeste jedan od najkomplikovanijh zahtjeva koji se postavlja kao izazov u vaspitno-obazovnim ustanovama ispred vaspitača i edukatora kao i u porodicama ispred roditelja ili staratelja. Izazovi koji se javljaju u praksi odnose se na superiorniji položaj odraslih u odnosu na djecu što rezultira najčešće nepoštovanjem Dječijih prava u onoj mjeri koju diktira društvo jačih, „odraslijih“.

Postavlja se pitanje na koji način se razvija profesionalna odgovornost edukatora o poštovanju dječijih prava u vrtićima i koliki je uticaj koji ostvaruju po istom odnosu na roditelje?

S obzirom na preporuke definisane vapitno-obrazovnom reformom i Konvencijom o pravima djeteta temu ovog rada predstavlja primjena Dječijih prava ali i komaparativan osvrt na stanje Dječijih prava u vaspitnoj praksi u odnosu na protok od trinaest godina. Prilikom realizacije ovog malog akcionog istraživanja i snimanja stanja u praksi uzimane su u obzir informacije dobijene istim instrumentom u JPU „Dragan Kovačević“ u Nikšiću.

The Application of the Children's Rights in Educational and Childcare Institutions - Comparative Analysis within the Framework of the Action Research

The application of children's rights in educational institutions as well as in within the framework of the primary social unit has always been challenging for every society itself. Due to the spreading democracy ideas this phenomenon grew in importance because it represents one of the elementary conditions needed for construction of social relations that could be fully and thoroughly realized in the upcoming years .

The protection of the children's rights is one of the most complicated demands that is set as a challenge for caretakers and educators to accomplish in educational and upbringing institutions, and for parents and guardians within the families.

The challenges that arise in practice relate to the superior position of adults comparing to children resulting mostly in disrespect of children's rights, dictated by the " League of adults".

The question is how to develop professional responsibility of educators in terms of protection of children's rights in kindergartens and how much influence they exert on parents in the same regard?

According to the recommendations defined by educational and upbringing reform and Convention of Child Rights the topic of this paper is both the implementation of the child's rights and comparative review of the state of the child's rights in upbringing practice during the last 13 years period of time. During the realization of this action research and assessment of the situation in practice, information is obtained by using the same instruments as in the preschool JPU "Dragan Kovacevic" in Niksic.

JOVO RADOVIĆ

Filozofski fakultet, Univerzitet Crne Gore, Crna Gora /
Faculty of Philosophy, University of Montenegro, Montenegro

Filozofija kao fundamentalna apologetika naučnog saznanja: slučaj Ričard Dokins

Ričard Dokins, ugledni britanski evolucionarni biolog, postao je poznat po svojim doprinosima popularizaciji nauke i promociji evolucionog razumijevanja prirode. Dokins je takođe poznat po svojim izuzetno kritičkim stavovima o religiji koje, kako se ovaj rad kani dokazati, vuče korjene ne samo iz evolucione biologije već sintetiše filozofske sudove i tako izvodi zaključke koji imaju multiplikativna dejstva; socijalna, sociološka, politička, filozofska... Analizirajući dva njegova glavna djela, Zabluda o Bogu i Sebični gen, pokušaćemo da dokažemo filozofsku apologetiku naučnog saznanja, ističući nauku Kao osnov za razumijevanje stvarnosti i odbacivanje metafizičkih ili teističkih vjerovanja, koje, s druge strane, nije moguće bez filozofije. Dakle kroz slučaj Dokins pokazaćemo tijesnu vezu između nauke i filozofije kao vezu koja svojim, nekad i disharmoničnim tnovima, opet pravi jedan savršen orkestar gdje se vrhunska ljudska naučna i duhovna dostignuća sklapaju u jednu cjelinu pjevajući himnu razumu.

Philosophy as the Fundamental Apologetics of Scientific Knowledge: The Case ofRichard Dawkins

Richard Dawkins, the distinguished British evolutionary biologist, has become known for his contributions to the popularizing of science and the promotion of evolutionary understanding of nature. Dawkins is also known for his extremely critical views on religion which, as this paper aims to prove, are not only rooted in evolutionary biology but synthesize philosophical judgments and thus draw conclusions that have multiplicative effects; social, sociological, political, philosophical... Analyzing two of his major works, The God Delusion and The Selfish Gene, we will attempt to demonstrate the philosophical apologetics of scientific knowledge, emphasizing

science as the basis for understanding reality and the rejection of metaphysical or theistic beliefs, which, on the other hand, cannot exist without philosophy. Therefore, through the case of Dawkins, we will demonstrate the close connection between science and philosophy as a bond that, with its sometimes discordant tones, once again creates a perfect orchestra where supreme human scientific and spiritual achievements come together as a whole, singing an anthem to reason.

IVA DREKALOVIĆ

Filozofski fakultet, Univerzitet Crne Gore, Crna Gora /
Faculty of Philosophy, University of Montenegro, Montenegro

Rane klavirske sonate Sergeja Prokofjeva i analiza modaliteta interpretacije

Stvaralaštvo Sergeja Prokofjeva, jedne od ključnih ličnosti u klasičnoj muzici XX vijeka, predstavlja inovativan muzički izraz tog doba. Rane klavirske sonate Sergeja Prokofjeva pružaju uvid u kompozitorov razvoj i postavljanje temelja za njegov jedinstveni muzički jezik.

Prokofjev je svojim novim pristupom klaviru redefinisao tradicionalne izvođačke tehnike, uvodeći nove harmonske strukture, ritmičke kompleksnosti i perkusivne elemente u klavirsku muziku. Ova studija se fokusira i na različite izvođačke pristupe Prokofjevljevim ranim sonatama, uključujući tehničke, interpretativne i stilističke aspekte. Nude se i preporuke za izvođače, zasnovane na detaljnom proučavanju Prokofjevljeve notacije i istorijskog konteksta njegovog stvaralaštva.

Istraživanje pečata Sergeja Prokofjeva u klavirskoj i klasičnoj muzici omogućava dublje razumijevanje njegovog muzičkog jezika i uticaja na savremene muzičke tokove. Različiti pristupi interpretaciji mogu značajno uticati na način na koji slušalac doživljava ove kompozicije, bilo kroz naglašavanje virtuozne tehnike, bilo kroz istraživanje dubljih emotivnih slojeva.

Early Piano Sonatas of Sergei Prokofiev and an Analysis of Interpretation Modalities

The work of Sergei Prokofiev, one of the key figures in 20th-century classical music, represents an innovative musical expression of that era. Prokofiev's early piano sonatas provide insight into the composer's development and the foundation of his unique musical language.

With his new approach to the piano, Prokofiev redefined traditional performance techniques, introducing new harmonic structures, rhythmic complexities, and percussive elements into piano music. This study also focuses on the various performance approaches to Prokofiev's early sonatas, including technical, interpretative, and stylistic aspects. Recommendations for performers are offered, based on a detailed examination of Prokofiev's notation and the historical context of his work.

Exploring Prokofiev's imprint on piano and classical music enables a deeper understanding of his musical language and its influence on contemporary musical trends. Different approaches to interpretation can significantly affect how listeners perceive these compositions, whether through emphasizing virtuosic technique or exploring deeper emotional layers.

ADRESAR UČESNIKA / ADDRESSES OF THE PARTICIPANTS

Slobodan Perović
Univerzitet u Beogradu
Filozofski fakultet
Čika Ljubina 18-20
11 000 Beograd
Srbija
e-mail: perovic.slobodan@gmail.com

Radovan Stojanović
Univerzitet Crne Gore
Elektrotehnički fakultet
Džordža Vašingtona bb
81 000 Podgorica
Crna Gora
e-mail: stox@ac.me

Patryk Dziurosz-Serafinowicz
University of Gdańsk
Faculty of Social Sciences
Jana Bażyńskiego 4
80-309 Gdańsk
Poland
e-mail: patryk.dziuroszserafinowicz@gmail.com

Tonći Kokić
University of Split
Faculty of Humanities and Social Sciences
Poljička cesta 35
21 000 Split
Croatia
e-mail: tkokic@ffst.hr

Sonja Tomović Šundić
Univerzitet Crne Gore
Fakultet političkih nauka
13. Jula 2

81 000 Podgorica
Crna Gora
e-mail: stomovic@t-com.me

Igor Petrović
University of Montenegro
Faculty of Maritime Studies
Put I bokeljske brigade 44
85 330 Kotor
Crna Gora
e-mail: igor.p@ucg.ac.me

Tatijana Dlabač
University of Montenegro
Faculty of Maritime Studies
Put I bokeljske brigade 44
85 330 Kotor
Crna Gora
e-mail: tanjav@ucg.ac.me

Vera Kapetanović
University of Montenegro
Faculty of Maritime Studies
Put I bokeljske brigade 44
85 330 Kotor
Crna Gora
e-mail: verak@ucg.ac.me

Jelena Latinović
University of Montenegro,
Biotechnical Faculty
Mihaila Lalića 15,
81 000 Podgorica,
Montenegro
e-mail: jelenalat@ucg.ac.me

Bogoljub Kandić
University of Montenegro,
Biotechnical Faculty
Mihaila Lalića 15,
81 000 Podgorica,
Montenegro
e-mail: kandic.b@ucg.ac.me

Nedeljko Latinović
University of Montenegro,
Biotechnical Faculty
Mihaila Lalića 15,
81 000 Podgorica,
Montenegro
e-mail: nlatin@ucg.ac.me

Предраг Р. Живковић
Универзитет Црне Горе
Филозофски факултет
Данила Бојовића бб
81 400 Никшић
Црна Гора
e-mail: sociollog@gmail.com

Наташа Кривокапић
Универзитет Црне Горе
Филозофски факултет
Данила Бојовића бб
81 400 Никшић
Црна Гора
e-mail: natashak@t-com.me

Душан Крцуновић
Универзитет Црне Горе
Филозофски факултет
Данила Бојовића бб
81 400 Никшић
Црна Гора
e-mail: dusankrcunovic@t-com.me

Milena Dževerdanović Pejović
Univerzitet Crne Gore
Pomorski fakultet Kotor
Put I bokeljske brigade 44
85 330 Kotor
Crna Gora
e-mail: milenadz@ucg.ac.me

Ilija Knežević
Univerzitet Crne Gore
Pomorski fakultet Kotor
Put I bokeljske brigade 44
85 330 Kotor
Crna Gora
e-mail: ilijak@ucg.ac.me

Nemanja Pudar
Univerzitet Crne Gore
Pomorski fakultet Kotor
Put I bokeljske brigade 44
85 330 Kotor
Crna Gora
e-mail: nemanjap@ucg.ac.me

Душан Игњатовић
Универзитет Црне Горе
Филозофски факултет
Данила Бојовића бб
81 400 Никшић
Црна Гора
e-mail: dusan.i@ucg.ac.com

Bogdana Stamenković Jajčević
University of Belgrade
Faculty of Philosophy
18-20 Čika Ljubina
11 000 Belgrade
Serbia
e- mail: bogdanastamenkovic@yahoo.com

Tatjana Vujović
Univerzitet Crne Gore
Filozofski fakultet
Danila Bojovića bb
81 400 Nikšić
Crna Gora
e-mail: tanja_vujovic@yahoo.com

Mara Šćepanović
Univerzitet Crne Gore
Prirodno-matematički fakultet
Bulevar Džordža Vašingtona bb
81 000 Podgorica
Crna Gora
e-mail: mara.scepanovic@gmail.com

Vladimir Drekalović
Univerzitet Crne Gore
Filozofski fakultet
Danila Bojovića bb
81 400 Nikšić
Crna Gora
e-mail: drekalovicv@gmail.com

Драга Бојовић
Универзитет Црне Горе
Филолошки факултет
Данила Бојовића бб
81 400 Никшић
Црна Гора
e-mail: dragabojovic@t-com.me

Darko Blagojević
Univerzitet Crne Gore
Filozofski fakultet
Danila Bojovića bb
81 400 Nikšić
Crna Gora
e-mail: blagojevicdarko@t-com.me

Bojan Milunović
Univerzitet Crne Gore
Filozofski fakultet
Danila Bojovića bb
81 400 Nikšić
Crna Gora
e-mail: milunovicbojan707@gmail.com

Vasko Milatović
Univerzitet Crne Gore
Mašinski fakultet
Bulevar Džordža Vašingtona bb
81 000 Podgorica
Crna Gora
e-mail: vaskom@ucg.ac.me

Vladimir Petrović
Srednja mješovita škola Golubovci
Golubovci b.b.
81304 Golubovci
Crna Gora
e-mail: mvladimir055@gmail.com

Marina Andrijević Petrović
Osnovna škola „Radojica Perović“
Blok VI
81 000 Podgorica
Crna Gora
e-mail: mvladimir055@gmail.com

Vlado Jovanović
Nezavisni istraživač – Fakultet političkih nauka UCG
81 000 Podgorica
Crna Gora
e-mail: vladosophy@gmail.com

Maja Todorović
Javna predškolska ustanova „Dragan Kovačević“
Kosovska bb
81 400 Nikšić
Crna Gora
e-mail: t.maja.t@gmail.com

Tamara Živanović
Javna predškolska ustanova „Naša radost“
Branka Ćopića 7
85 340 Herceg Novi,
Crna Gora
e-mail: tamarazivanovic0@gmail.com

Jovo Radović
Univerzitet Crne Gore
Filozofski fakultet
Danila Bojovića bb
81 400 Nikšić
Crna Gora
e-mail: jovoradovic02@gmail.com

Iva Drekalović
Univerzitet Crne Gore
Filozofski fakultet
Danila Bojovića bb
81 400 Nikšić
Crna Gora
e-mail: evsdre@gmail.com