

# GEOGRAPHIA

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**UNIVERSITATIS BABEȘ-BOLYAI**  
**GEOGRAPHIA**

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## IN MEMORIAM

### GRIGOR P. POP (1933-2019)



Domnul Grigor Pop, unul dintre cei mai vechi membri ai facultății noastre, profesor, coleg și prieten, a trecut în neființă în data de 24 iunie 2019, la vârsta de 84 de ani. Este o mare pierdere pentru catedra noastră, pentru facultate și pentru comunitatea geografică din România. Profesorul Pop s-a bucurat de apreciere în comunitatea academică, dânsul fiind un model pentru mulți profesori, cercetători, doctoranzi sau studenți. Metodele sale de investigație, de predare și de cunoaștere geografică rămân repere profesionale pentru mulți dintre noi. Pe lângă faptul că a fost un om de știință și un cadru didactic remarcabil, profesorul Pop a fost un coleg minunat, un om simplu, amabil și modest, un bun sfătuitor ce va rămâne multă vreme în amintirea celor care l-au cunoscut. În urmă cu cinci ani,

într-o zi de septembrie, a sărbătorit cei 80 de ani de viață cu un public numeros în amfiteatrul George Vâlsan. După acest eveniment, a decis să se retragă din activitatea sa profesională și să aibă grijă de viața personală și de familie, după o carieră de excepție care a cuprins mai bine de 55 de ani de Geografie.

S-a născut în Calna, un sat mic de la nord de Cluj-Napoca, în comuna Bobâlna, la 16 septembrie 1933 și a crescut într-o familie cu 5 copii, al doilea cel mai în vârstă dintre aceștia. Anii de copilărie au fost amintiți deseori și cu mult farmec în poveștile despre locul de naștere și despre viața trăită în frumoasa și onorabila sa familie. Ca majoritatea tinerilor din acea vreme, a parcurs etapele educației în condițiile foarte dificile ale celui de-al doilea Război Mondial și ale perioadelor de opresiune care au urmat. A lăsat satul natal pentru gimnaziul din Dej și apoi, pentru liceul din Câmpia Turzii, unde a lucrat pentru a se întreține și pentru a parcurge și finaliza învățământul liceal.

După un examen riguros de intrare, a devenit student în anul 1955, îndeplinindu-și visul de a urma calea științelor pământului. A urmat specializarea Geografie-Geologie, bucurându-se de cursuri, aplicații de teren și practici de vară în cei cinci ani de studenție. Încă din timpul studiilor, Grigor Pop a arătat și dovedit tenacitate, pasiune și muncă asiduă, în teren sau în laborator, scrierile sale fiind premiate sau publicate în diverse reviste științifice. A absolvit în 1960, după care a fost profesor și director într-o școală secundară din apropierea orașului adoptiv, în comuna Gârbău. Un an mai târziu a devenit asistent la Facultatea de Istorie și Geografie din cadrul Institutului Pedagogic din Cluj și mai târziu, la cel din Oradea. A obținut titlul de doctor în științe în anul 1971, sub supravegherea competentă a profesorului Ion Șandru, la Universitatea Alexandru Ioan Cuza din Iași, unde și-a susținut cu succes teza „Câmpia Crișurilor - studiu geografico-economic”, marcând orientarea sa evidentă către geografia umană. A trecut prin toate etapele carierei sale didactice și etapele ierarhiei academice la Oradea și la Cluj, după revenirea la Universitatea „Babeș-Bolyai” în 1978. A fost numit profesor universitar și coordonator de doctorat în 1990. Peste treizeci de doctoranzi au reușit să-și realizeze tezele sub supravegherea sa, pe noile direcții de cercetare în domeniul geografiei sociale, politice, istorice și economice.

Contribuțiile sale academice au influențat puternic geografia umană și regională din România, iar autoritatea sa științifică a fost recunoscută pe scară largă la nivel național, așa cum o demonstrează numeroasele și diversele sale publicații, citări, recenzii și colaborări. Profesorul Pop a fost autorul a peste 220 de lucrări științifice, apărute în țară și în străinătate. Numele său este asociat în geografia umană cu lucrări cuprinzătoare precum: „România. Geografie economică”;

„România. Geografia circulației ”și „România. Geografia Hidroenergetică”, toate ca modele unice de abordare în geografia economică românească. În ultima perioadă a carierei sale, profesorul Pop a elaborat mari sinteze geografice precum „Carpații și Subcarpații din România” (2000), „Depresiunea Transilvaniei” (2001), „Dealurile și Câmpia de Vest” (2005) sau monografia „Județul Cluj” (2007), rezultate ale îndelungatei experiențe în activitatea de predare și de cercetare. Pentru toate aceste contribuții la dezvoltarea geografiei românești, profesorului Pop a primit distincția Doctor Honoris Causa a Universității din Oradea și titlul de profesor onorific al Universității Alexandru Ioan Cuza din Iași.

Din 1990 până în 2000, profesorul Pop a fost ales în funcția de șef al nou fondatei Catedre de Geografie Umană și Regională și, ulterior, al Departamentului de Geografie Umană. În timpul mandatului său, el a condus mica noastră comunitate de geografie umană cu inimă și suflet și a pus bazele creșterii și dezvoltării instituționale a facultății cu toate specializările sale. Și-a îndeplinit funcția administrativă cu obiectivitate și înțelegere, menținând o atmosferă prietenoasă și armonioasă, între toți membri facultății. Prezența dânsului a fost întotdeauna confortabilă și agreabilă, plăcută în toate ipostazele, lipsită de superioritate sau ipocrizie.

Profesorul Pop a lucrat cu entuziasm și cu dăruire pentru comunitatea noastră geografică, fiind asociat multă vreme cu revista noastră științifică, „Studia Universitatis Babeș-Bolyai”, al cărei editor a fost. Lui îi datorăm o serie de lucrări istoriografice valoroase, cea mai importantă fiind „Școala geografică clujeană”, publicată în 2007 și „Publicația științifică a Școlii Geografice Clujene (1919 -2010)”, apărută în 2010.

În contextul anilor nouăzeci, când facultatea avea mare nevoie de proiecte de dezvoltare instituțională, de pregătire a cadrelor didactice și a studenților pentru a se alinia cerințelor la nivel internațional, profesorul Pop a avut un rol cheie în dezvoltarea unor programe educaționale importante. Cel mai relevant dintre acestea a fost programul TEMPUS (EU-Phare JEP 11070/96) “Geography Initiative on Tourism in Higher Education”, un proiect amplu care a avut o contribuție importantă la dezvoltarea structurală a Facultății de Geografie, în special la specializarea de Geografia Turismului. Instituțiile partenere ale proiectului au fost atât academice, cât și profesionale din România, Marea Britanie și Republica Irlanda: University College Chichester din Bognor Regis, Weald and Open Air Museum din Singleton, CSA Computing Services din Dublin, Transilvania Turism SA și Muzeul Etnografic al Transilvaniei. Profesorul Pop a fost coordonatorul acestui proiect de patru ani și a participat activ în toate etapele și activitățile



sale complexe. De asemenea, a fost implicat în diferite activități științifice cu audiență internațională în Franța, Regatul Unit (Seminarul Britanic-Român de Geografie), Austria, Germania, Italia sau Norvegia.

Profesorul Grigor P. Pop a fost un om de știință pasionat și un dascăl devotat, arătând celor din jur cât de importantă este geografia în înțelegerea lumii reale. A fost un om echilibrat și onest, un model de etică personală și profesională. Ne vom aminti cu mare respect și plăcere de prezența sinceră, prietenoasă și înțelegătoare a domniei sale. Sper că vom compensa emoțiile pierderii cu bucuria de a ne aminti anii petrecuți cu dânsul în colectiv. Sincere condoleanțe familiei. Dumnezeu să-l odihnească!

Conf. dr. Voicu Bodocan

*Departamentul de Geografie Umană și Turism*

## IN MEMORIAM

### NICOLAE CIANGĂ (1947-2019)



S-a stins, mult prea devreme - în cea de a 21-a zi a lunii iulie, cu o discreție absolută și înconjurat de minunata sa familie, pe care a iubit-o și prețuit-o fără limite – profesorul, colegul și, mai ales, OMUL Nicolae Ciangă. Mentor de excepție, dascăl de vocație al sufletului și al minții deopotrivă, om cu o vastă cultură generală și geografică, iubitor de natură și de frumos, un suflet blajin, sensibil și generos, un model de dăruire și devotament pentru profesia și comunitatea geografică clujeană, profesorul Nicolae Ciangă a fost cel care a reușit nu numai să însufle și să inspire colegii și prietenii, ci și să deschidă și lărgească mereu noi orizonturi de cunoaștere geografică pentru generații de studenți, să strunească, să

îndrume și, totodată, să fie mereu printre cei mai îndrăgiți de către aceștia, care îl vor omagia și îi vor păstra și cinsti memoria luminoasă și-i vor fi mereu recunoscători pentru tot ceea ce a oferit cu atâta generozitate de-a lungul întregii sale vieți și cariere profesionale.

Născut pe 21 noiembrie 1947, în satul Voinești, astăzi cartier al orașului-stațiune „al celor 1000 de izvoare” - Covasna din județul cu același nume - într-o zonă cu un cadru natural de excepție, își va descoperi timpuriu sensibilitatea și dragostea pentru natură care îi va fi cultivată de dascălii din școala primară și gimnazială și, mai târziu, de cei de la Liceul Real din Covasna, pe care l-a urmat între anii 1961- 1965. Aceștia îl vor îndruma spre domeniul geografic pe care îl va îmbrățișa cu pasiune și căruia i se va dedica pentru totdeauna începând chiar cu anul următor (1966) când a ascultat „chemarea” și a continuat să-și dezvolte și aprofundeze vocația odată cu admiterea sa la Facultatea de Biologie-Geografie a Universității „Ioan Cuza” din Iași, specializarea Geografie, pe care o absolvă strălucit în anul 1971 ca șef de promoție.

În același an va fi repartizat la Cluj, unde va activa între anii 1971-1991 ca cercetător științific în cadrul Colectivului de Cercetări Geografice al Academiei Române, filiala Cluj, interval în care a fost implicat direct și activ în elaborarea unui număr considerabil de studii științifice, contracte și proiecte de cercetare cu aplicabilitate practică certă, axate pe problematici diverse, însă cu precădere din domeniul geografiei umane și a turismului, în care a devenit un reputat și apreciat specialist.

O etapă importantă în perfecționarea profesională a fost perioada în care a elaborat, de asemenea, la Universitatea „Al. I. Cuza ” din Iași, teza de doctorat, susținută cu succes în anul 1991 (Turismul din Carpații Orientali. Studiu de Geografie Umană), efort care a fost încununat în anul 1999, la scurt timp după publicare, cu premiul „Simion Mehedinți” al Academiei Române, fapt care atestă valoarea și aprecierea deosebită a rezultatelor științifice obținute în cadrul acestui valoros studiu.

Anul 1991 marchează o schimbare importantă în cariera de cercetător, odată cu implicarea sa în învățământul universitar ca și cadru didactic titular al Facultății de Geografie din cadrul Universității Babeș-Bolyai, unde s-a afirmat rapid, parcurgând etapele consacrării științifice și treptele didactice universitare, atingând în anul 1997 cea mai înaltă poziție academică (profesor universitar), devenind un autentic și deosebit de apreciat magistru. A rămas în același timp un pasionat și prolific cercetător științific, focusat cu precădere asupra celui mai dinamic domeniu al geografiei – turismul – perioada în care a fost cadru didactic universitar fiind cea mai fructuoasă, rezultatele obținute, mai mult

decât concludente, fiind materializate în peste 120 de studii și articole publicate aproape în întregime în reviste de mare prestigiu și tradiție indexate în baze de date internaționale și mai recent, în reviste cotate ISI și indexate Web of Science, o parte dintre acestea (15) fiind publicate în străinătate. A publicat, de asemenea, o serie de cărți sau capitole în cărți de specialitate (24) ca autor sau coautor și a contribuit cu articole științifice și în calitate de editor la publicarea mai multor volume colective sub egida unor edituri de prestigiu din țară (Editura Academiei Române, Editura Presa Universitară Clujeană, Editura Universitară București etc.) și din străinătate (din țări precum Statele Unite ale Americii, Polonia, Serbia, Marea Britanie, Coreea de Sud).

În cadrul acestor contribuții, pe lângă preocupările tradiționale, profesorul Ciangă a căutat mereu să abordeze și problematici și direcții de cercetare de actualitate și impact din mai multe domenii ale Geografiei: turism (planificarea și amenajarea turistică, elaborarea unor modele de estimare a valorii atractive ale resurselor turistice, modele și strategii generale și secvențiale de dezvoltare și promovare a turismului la diferite scări teritoriale și ranguri taxonomice, riscurile induse de activitățile turistice etc.), Geografia populației (resursele de forță de muncă și valorificarea acestora, care au constituit subiectul unor cercetări contractuale în unități productive din domeniul minier din județele Hunedoara și Maramureș sau cel agricol - pentru Munții Apuseni sau județul Cluj), Geografia activităților primare și terțiare (acestea au constituit parte integrantă a cercetărilor regionale legate de Depresiunea și Podișul Transilvaniei, Carpații Orientali și Occidentali, fiind publicate, pe baza acestora, numeroase articole științifice, capitole și subcapitole din Geografia României, volumele II și III, contribuind și la elaborarea unor cursuri universitare), apele subterane – sursele hidrominerale (care au fost studiate în întregul areal carpatic și transilvan, servind la elaborarea unor teme contractuale a căror rezultate au fost publicate sau au folosit la elaborarea capitolului “Resursele turistice hidrografice” în cazul tezei de doctorat și cursurilor de Geografia turismului în România) și topoclimatologie (cu studii realizate asupra unor spații geografice cuprinse pe foi topografice la scara 1:200 000 - Bistrița, Cluj, Șimleu Silvaniei, Satu Mare, Timișoara, Alba Iulia, Turda, utilizând mijloace de cercetare specifice geografiei, dar și statistico-matematice și cartografice).

Preocupările susmenționate se regăsesc, de asemenea, și în cele 25 de proiecte de cercetare în care a fost, de asemenea, implicat în perioada când a activat ca și cercetător științific (finanțate de Academiei Române, Ministerului Învățământului, Ministerul Agriculturii) sau la cererea unor unități productive sau instituții ale statului (I.M. Deva, I.M. Borșa, Institutul de Proiectare și Sistemare Cluj, Consiliul Județean, Direcția de Cadastru Funciar), coordonând,

în această perioadă, contractele „Realizarea de hărți topoclimatice la scara 1:200000” și „Actualizarea situației apartenenț-cadastrală în vetrele așezărilor rurale din județul Cluj”.

Ulterior, ca și cadru didactic universitar, a fost implicat activ în toate marile proiecte câștigate și elaborate de Facultatea de Geografie (în cadrul cărora a coordonat elaborarea capitolelor legate de Geografia umană și cu deosebire de Geografia turismului), precum și într-o serie de proiecte și granturi de cercetare obținute prin competiție națională și finanțate substanțial de instituții de prestigiu din țară și străinătate (Academia Română, CNCSIS, Banca Mondială etc.), în patru dintre ele deținând funcția de director.

Rezultatele cercetării s-au concretizat, de asemenea, nu doar în publicarea de cărți, monografii, articole, în țară și străinătate, ci și în elaborarea de cursuri universitare, din care unele în premieră (Geografia turismului în România, Amenajare turistică, Metode de analiză în Geografia turismului, Geografia activităților recreative, Patrimoniul turistic și valorificarea sa).

Expertiza științifică a profesorului Ciangă a fost atestată și prin cooptarea sa în colectivele editoriale ale mai multor publicații cu un ridicat prestigiu național și indexate în baze internaționale (șase la număr), prin numărul ridicat de citări ale publicațiilor sale în diferite reviste și cărți de specialitate (în medie, peste 35 de citări anual), precum și prin calitatea de expert evaluator UEFISCU și CNCSIS.

Ca un corolar al acestor realizări, în anul 2002 a obținut calitatea de conducător de doctorat, tezele celor peste 30 de doctoranzi pe care i-a îndrumat distingându-se prin originalitate și aplicabilitatea practică a rezultatelor, atribute induse, desigur, în mare măsură, de calitatea și rigoarea expertizei științifice de care doctoranzii săi au beneficiat. Pe acest fond, a fost invitat, în calitate de referent oficial, să facă parte în peste 40 de comisii pentru evaluarea, susținerea și acordarea titlului științific de doctor în Geografie la Universitatea București, Universitatea „Al. I. Cuza” din Iași, Universitatea „Babeș-Bolyai” Cluj-Napoca, Universitatea din Oradea și Universitatea Tehnică din Cluj-Napoca.

Pe parcursul remarcabilei sale cariere științifice și didactice profesorul Ciangă a fost invitat la numeroase manifestări științifice de înaltă ținută academică, atât în țară, cât și în străinătate (Polonia, Ungaria, Cehia, Spania, Portugalia, Marea Britanie, Coreea de Sud etc), comunitatea academică recunoscându-i expertiza și meritele științifice prin recompensarea sa cu numeroase distincții, premii și diplome.

În anul 2003 a inițiat și a contribuit decisiv la înființarea specializării de nivel licență Geografia Turismului, având la bază, preluând și continuând firesc experiența acumulată în cadrul colegiilor de „Geoinformare și prospectare turistică”

și, mai apoi, „Activități turistice”, în a căror bună funcționare a avut, de asemenea, un rol major. Totodată, specializările la nivel de masterat Prospectare și amenajare turistică (care a funcționat în perioada 2004-2007), respectiv Amenajare și dezvoltare turistică (începând din anul 2007) au fost înființate tot sub coordonarea sa.

A deținut, succesiv, până în anul 2012, funcțiile de cancelar (1996-1997), respectiv prodecan (1997-2000) al Facultății de Geografie și de șef al Catedrei de Geografie Umană, devenită ulterior Departament de Geografie Umană și Turism (2000-2012).

Dincolo însă de meritele și realizările sale deosebite în plan academic, social și managerial, personalitatea sa a fost creionată și întregită de un mănunchi de calități umane cu totul deosebite: altruismul, blândețea, empatia, permanenta disponibilitate pentru dialog, corectitudinea, dar și vitalitatea molipsitoare, spiritul viu, curios, mereu în alertă, calități prin care a reușit să fie un model pentru generații de studenți și colegi, dar și pentru persoane din afara mediului universitar, calități care au făcut ca profesorul Ciangă să fie stimat, apreciat și iubit de toți, deopotrivă.

Prin plecarea sa prematură în „călătoria cea mare” a lăsat un gol imens atât în cadrul întristatei familii, cât și în rândul prietenilor apropiați, lăsându-i mai săraci, cu siguranță, pe toți cei care l-au cunoscut, pe cei cu care a colaborat în îndelungata sa carieră de cercetător și cadru didactic universitar și pe cei cărora le-a îndrumat pașii pe calea cunoașterii științifice. În același timp, Geografia românească, comunitatea științifică a specialiștilor în Geografie umană și turism și îndeosebi Geografia clujeană - pe care a slujit-o cu devotament până în ultima clipă - pierde un om minunat, un spirit erudit, un coleg și un prieten deosebit, un cercetător pasionat și un magistru de excepție.

Dumnezeu să-l odihnească în pace!

Prof. univ.dr. Ștefan Dezsi

*Departamentul de Geografie Umană și Turism*



## IN MEMORIAM

### RONAN PADDISON (1945-2019)



În luna iulie a acestui an, comunitatea științifică a pierdut unul din cei mai marcanți membri ai geografiei britanice, pe profesorul emerit Ronan Paddison de la Universitatea din Glasgow. Numele dânsului este legat de geografie urbană și de geografie politică, orașul fiind deseori spațiul care a reunit preocupările sale în cele două direcții de aprofundare a geografiei umane. Orașul a constituit subiectul de care s-a simțit cel mai mult atras, ca spațiu public și ca spațiu politic. Guvernanța, regenerarea sau marketingul urban au fost tematicile sale preferate.

Numele dânsului se confundă cu cel al renumitei reviste *Urban Studies*, al cărei editor a fost mai multe decenii. Profesionalismul său ca editor a fost larg recunoscut și în alte proiecte în care s-a implicat. A fondat revista *Space and Polity* și a coordonat o serie de volume dedicate orașului: *Handbook of Urban Studies* (Sage Publications, 2000), *Culture-Led Urban Regeneration* (Routledge 2006), *Researching*



*cities* (Routledge, 2011), *Reform of Local Government Finance in Britain* (Routledge, 2013), *Cities and Social Change: Encounters with Contemporary Urbanism* (Sage Publications, 2014), *Cities and Economic Change: Restructuring and Dislocation in the Global Metropolis* (Sage Publications, 2014). A scris mult despre orașul său, Glasgow, care a parcurs intense transformări, de la al doilea oraș al imperiului și oraș industrial, la Capitală Culturală Europeană.

Pe lângă geografia urbană, geografia politică a fost domeniul său de largă recunoaștere internațională. *The Fragmented State* (Basil Blackwell, 1983) reprezintă lucrarea sa emblematică în geografie politică în care dezbate unitatea și diversitatea statelor, difuziunea puterii la scări diferite și felul în care aceasta funcționează în practică, autonomia și federalismul, fragmentarea și reorganizarea teritorială a spațiului politic. Statutul Scoției în Regatul Unit și Geografia Brexitului, au fost subiecte pe care le-a abordat în lucrările sale de geografie politică.

A fost cel care m-a inițiat în cunoașterea și analiza Geografiei Politice, domeniu pe care l-am descoperit fascinant la începutul anilor nouăzeci. Am aflat de preocupările domniei sale din puțina literatură la care am avut acces atunci, iar când l-am solicitat să mă coordoneze într-un posibil stagiu de pregătire a răspuns fără ezitare. Sprijinul personal și academic oferit de domnul Paddison în perioada petrecută la Universitatea din Glasgow ca bursier Tempus, a fost esențial pentru mine. A fost aproape de geografia din România, implicându-se în manifestări științifice organizate la Oradea, București sau Timișoara, a oferit consultanță și a făcut parte din comitete editoriale ale mai multor reviste printre care *Revista Română de Geografie Politică* și *Journal of Urban and Regional Studies*. A fost oaspetele Catedrei de Geografie Umană în mobilitate Erasmus, predând cursuri legate de federalism studenților noștri masteranzi. În anul pensionării de la School of Geographical and Earth Sciences al renumitei universități scoțiene, acolo unde și-a petrecut aproape întreaga carieră academică, profesorul Paddison a făcut o importantă donație de carte geografică bibliotecii noastre. Urma să ne fie oaspete, în această toamnă, la conferința centenară *Geographia Napocensis*. A fost un om sociabil, tolerant și exigent și nu în ultimul rând generos de care ne vom aminti cu drag.

Condoleanțe familiei!

Conf. dr. Voicu Bodocan

*Departamentul de Geografie Umană și Turism*

## **FIRE ON THE MOUNTAIN. DISTURBANCE AND REGENERATION IN DECIDUOUS AND CONIFER FORESTS. 20 YEARS OF EXPERIENCE**

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HOREA CACOVEAN<sup>4</sup>, MATHIAS HALL<sup>5</sup>**

**ABSTRACT.** *Fire on the Mountain. Disturbance and Regeneration in Deciduous and Conifer Forests. 20 Years of Experience.* Two test and monitoring sites in SW Germany (Forchtenberg) and Leghia (NW Romania) furnish insights to the regeneration modes after fire, clearing, burning, and cultivation -slash and burn - in a deciduous forest or after wildfire in a conifer stand. Forest maps and archivalia helped to reconstruct the forest history of the last 250 years of the Forchtenberg site, which as a heritage still influences the present situation. We could document the autonomous co- evolution of vegetation and soil over two decades. It was done by transects and mapping as well as by soil analysis and micromorphology. The role of soil animals for the weathering of charcoals became evident. The evolution of vegetation and soil after a wildfire could be studied on the Leghia site and compared with the Forchtenberg results. As the Leghia site was not cleared after the fire, it enabled us to follow the stages of decay and of regeneration, where conifers do not play a role. Moreover, one could investigate the effects of grass- and pasture fire, still active in the region. It also evidenced the necessary differentiation of charred material into wood- and grass coal. The indicator values of topsoil/soil surfaces are presented as well as those of charred material for the regeneration stages. Finally, we will discuss the fire risk in deciduous forests under a changing climate.

**Keywords:** *Forest disturbance, succession types, forest history, slash and burn, wild fire, charcoal taphonomy, fire risk.*

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## 1. INTRODUCTION

Slash and burn is a widely discussed item in archaeology and landscape history (see Jacomet et al. 2017, Rösch et al. 2017). It mainly turns around the question, whether a shifting economy or a permanent cultivation could be an adapted model for the Late Neolithic. However, regeneration modes and their duration after heavy disturbance became an important topic with the reinstallation of a coppice system in Bavaria (Ewald et al. 2018) and the discussion, whether these exploitation systems would be more adapted to the changing ecological and climatic conditions than the high canopy forest systems. Moreover, fire and fire risk got important in temperate regions during the last years.

Two test sites will serve for information on these topics. The one is the long-time Forchtenberg experiment (Rösch et al. 2011, Schulz et al. 2014), in SW Germany and the other is the wildfire site at Leghia/NW-Romania (Schulz 2017). For both sites the main questions are: which are the pathways of regeneration of vegetation and soil after severe disturbance such as fire and how many years it will take? In addition, what are future risks out of a changing climate? To answer these questions, the regeneration is documented for vegetation and soil. This was done regularly by mapping and by physiognomic transects. Maps were established in parallel for the soil and plant cover. They serve to establish time series and to explore the types of evolution. Investigation on soil concentrates on topsoil/ soil surfaces and it is basic structure and micromorphology. This is equally valid for the question of charcoal types and evolution in their dependence on soil animals. The question of a rising fire risk in deciduous forests will be discussed too on the background of a changing climate.

## 2. THE TWO TEST SITES AND THEIR PHYSICAL CONDITIONS

Both sites are situated in temperate forests of Central Europe and they are part of old cultural landscapes. The aim of these investigations is to explore the chances of the slash and burn-model to explain the Late Neolithic economy for the one and to elucidate the pathways of regeneration of vegetation and soil after sever disturbance in a forest environment, where fire plays and important role.

### *2.1. The Forchtenberg experiment. A general description*

It is since 1997 that near the town of Forchtenberg up the Kocher valley/ SW Germany (49° 37'N 10°15'E) a 3.5 ha forest plot served for a long-time experiment on slash and burn and the following successions of vegetation and

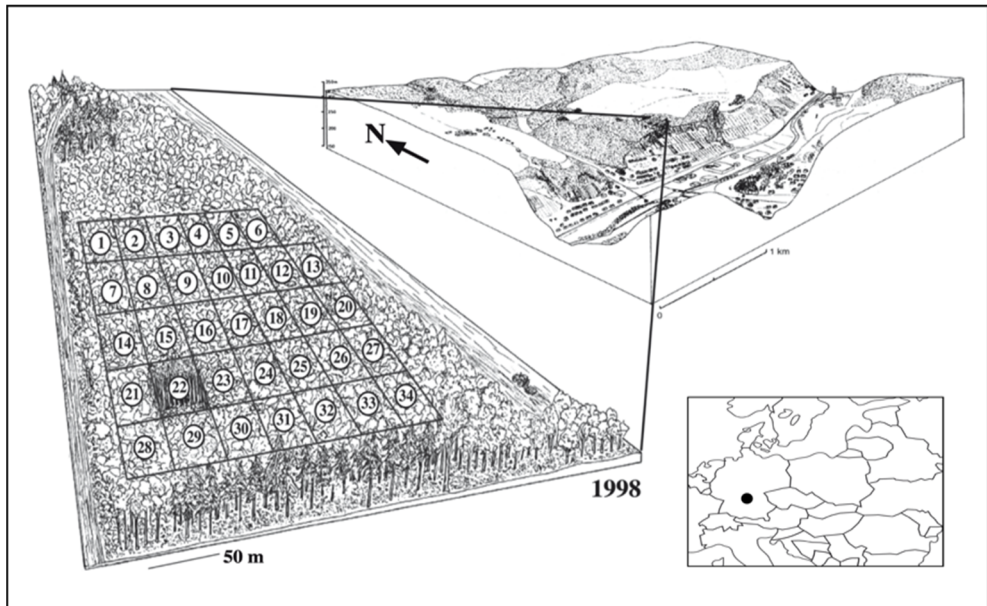
soil (see figure 2). It belongs to the Forest Authority of Hohenlohe-formerly Schöntal and it was placed at our disposal in 1997 for a period of about 20 years (Rösch et al 2011). However, the work will continue.

### **2.1. The double direction of the experiment**

This comprises:

A: Clearing, burning and cultivation in order to have an idea on possible yields to be interpreted for the Late Neolithic landscape management (Rösch et al. 2017, Schier 2009, 2017). The yields in the first year of cultivation were astonishingly high - up to 40 dzt/ha (Ehrmann 2009, 2014) but they decreased dramatically in the following years. This strongly indicated the necessity of rotation or shifting cultivation even if this topic is disputed again in recent times (Jacomet et al. 2016, Rösch et al. 2017).

B: A survey of regeneration pathways of vegetation and soil after the end of the cultivation period. It is the main object of this article. This also will give ideas to interpret former landscape development and provide indicators in soil for human interference especially for fire conditions and for the taphonomy of charred material.

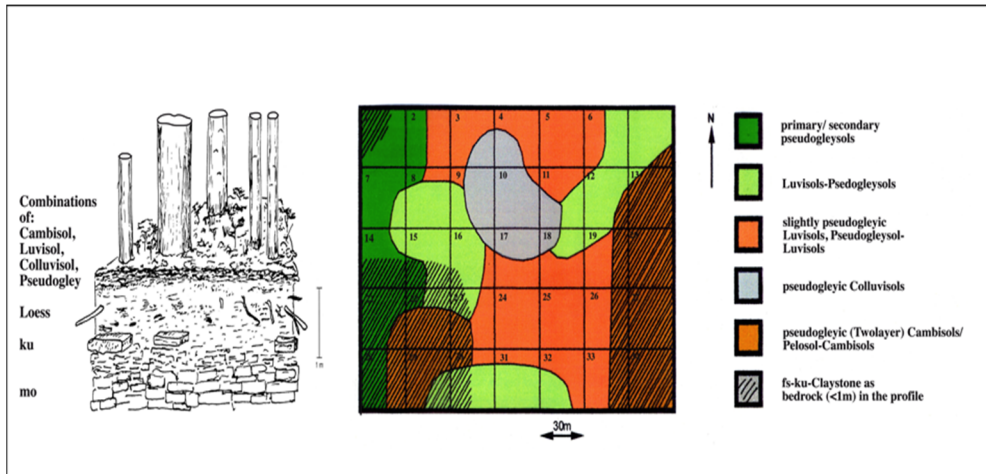


**Fig. 1.** The location and compartmentation of the Forchtenberg test site up the Kocher valley / SW Germany (from Schulz 2017, modified).

## 2.2 The physical situation of the test site

The physical situation is described by figures 1 and 2. The test site is situated on the Hohenlohe-Plain, which evolved on a layer of siltstones of Upper Triassic age covering massive banks of Middle Triassic limestone. Soils have developed from an approximately 1 m - thick loess cover. They mostly belong to Luvisols and Cambisols. Stagnic features are common.

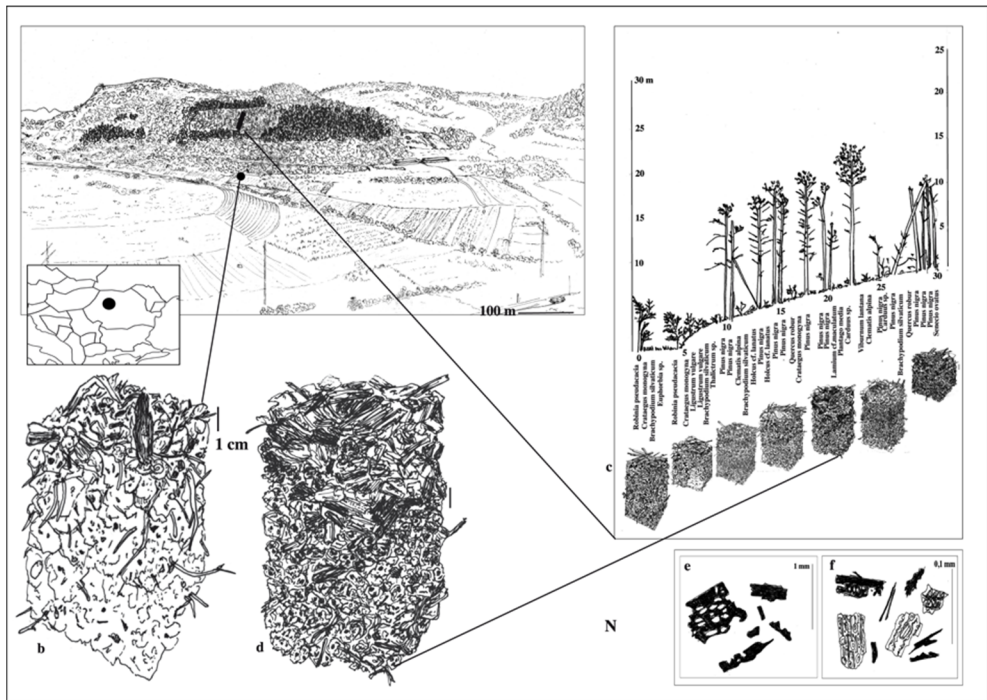
Mean annual precipitation is about 850 mm with a mean annual temperature of 8.9°C (Hermann et al. 2007). The forest mainly consists of 40 to 60 years old beech as well as oak, maple, ash, and others.



**Fig. 2.** The physical conditions of the Forchtenberg-test site; geology and pedology (from Schulz 2017, Herrmann et al. 2007, modified).

## 4. The Leghia wild fire site. A comparison site to the Forchtenberg experiment

It is near the village Leghia in western Transylvania / Romania (46°52'N 23°12'E) where investigations on the evolution of vegetation a soil after a “wild” fire in 2011 could start in 2014 (see figure 3). The site takes a part of the cuesta of tertiary (Eocene) lime-, sand- and clay-stones north of the Nadăș Valley, which goes parallel to the Someș River (Cacovean et al. 2016). The cuesta also got famous for its gypsum exploitation (Husu 1999).



**Fig. 3.** Overview of the Leghia escarpment in NW Romania. It shows the forest fire site in the *Pinus* plantation, the topsoils of a burned pasture and moder with in the *Pinus*-stands and a combined transect on the lower slope of the wild fireplace. It also demonstrates the difference between wood-coal and grass-coal.

The region is intensively exploited for wheat, corn or potatoes as well as for meadows and sheep pasture. It has a subcontinental climate with about 600 mm precipitation but a highly contrasted seasonality. Originally the slopes of the cuesta were covered with deciduous forests -*Acer*-, *Quercus*- or *Fagus*- (Coldea 2015) but heavily overexploited during time. The slopes were often afforested with Pine trees, in the 1960s. Soil cover is very shallow and belongs to calcaric regosols.

One of these forest plots took fire in august 2011. There were some attempts to extinct the fire but afterwards the site remained more or less untouched.

The Leghia site enabled us to compare the vegetation-soil-regeneration in a deciduous forest with that of a conifer forest. The investigations consisted of transects of vegetation and soil, pedology and micromorphology.

### 3. METHODS

Investigation work comprised both the physical work to prepare the sites as well as the different methods of documentation.

#### 3.1. *The physical work*

The Forchtenberg test site was divided into 34 plots each of 30 x 30m (see figure 1). Slash and burn comprised to clear on plot in winter and remove all wood larger than 10 cm diameter. The rest remained to dry until the next fall. Branches and twigs are collected to a 1m high roll. It was enflamed by glowing charcoals and was pulled over the surface of the respected plot. Wheat was sown in the ash layer. It was harvested in the next summer. Cultivation was repeated one or two times. Afterwards the plot was abandoned and a next plot was chosen for the experiment. Thus, a series of different stages of regeneration characterised the test site after some years (see Erhmann et al. 2009, Schulz et al. 2014, figure 4).



**Fig. 4.** The threefold work of slash and burn (from Schulz et al. 2014). It comprises clearing in winter, drying in the summer, burning in fall, and cultivation for some years.

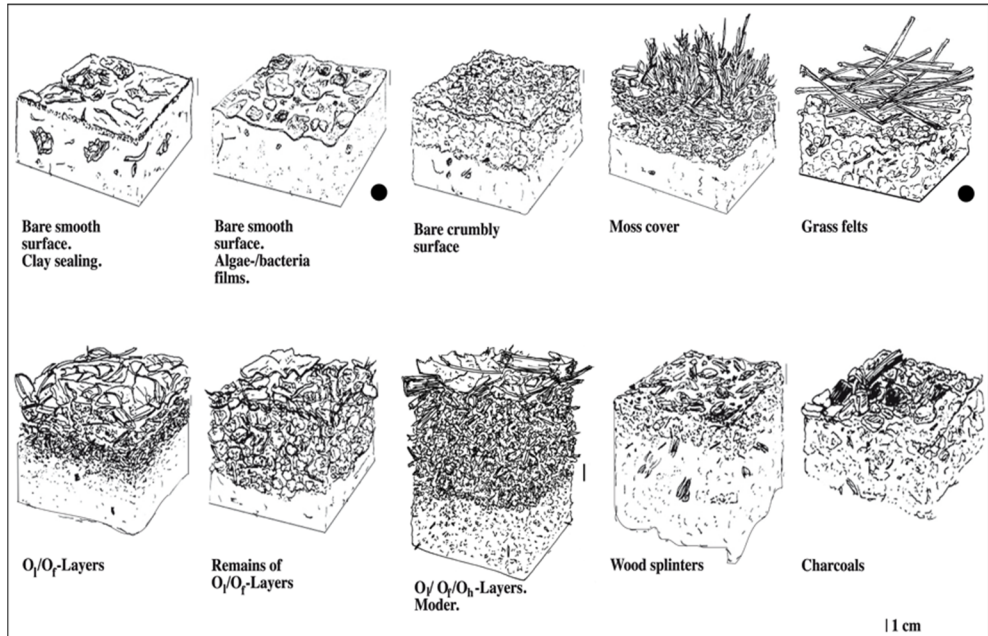
### **3.2. Documentation**

The abandoned plots were documented for their evolution of plant- and soil cover. This was done by mapping of vegetation and soil and by transects in order to give an image of the third dimension.

The principle of mapping is the documentation of soil cover of single plants- in the limits of scale 1:50. The presentation, however, is done in physiognomic terms (trees, shrubs, dwarf shrubs, high forbs, herbs, grasses, mosses). After the first cycle of forest development- to a high coppice - we changed the presentation and the crown cover of trees is given now transparently and colour rings indicate the genera. The lower vegetation is still presented by physiognomy only. In case single surface is too small, a mosaic is announced for the respective surface.

Soil is mapped by using the soil surface/topsoil as main indicators for the regeneration stages. They belong to the most sensitive systems to environmental changes. An inventory of soil surfaces (figure 5) shows types of a rapid mineral organisation (bare surfaces) and several stages of biological colonisation including "Pellicular Organisation Types" (Pomel 2008) or "Biological Soil Crusts" (Belnap et al 2001, Ullmann and Büdel, 2001, Weber et al. 2016). These soil surface types are indicators for their ecological conditions and, thus, considered as "functional surface cover types" (Buis et al. 2009). Clay sealing is a first and rapid organisation fixing and stabilising a new mineral surface within days. Bacteria- and algae- films represent the first stage of biological colonisation, which may be followed by mosses, grasses or herbs coming either from a seed bank or from external transport. Grass felt may develop to thick layers and hamper a colonisation of tree seedling for long time. They evolve within months. Leaf layers indicate a bush or forest environment with a varying activity of earthworms and other decomposers. Crumbly mineral surfaces point to a very intensive decomposition, whereas an O<sub>h</sub>-layer is a sign of a very slow mineralisation of organic matter. Splinters and charcoal are additional types, the latter indicating fire. Mostly-as vegetation types do- these surface types occur in mosaics too. Besides mapping structure, samples were collected at selected sites. They were analysed under the binocular and samples were chosen for thin sections. These served to analyse microstructure and to document the different interferences of soil animals. Thus, the soil samples were not destroyed in order to isolate the soil animals. Those were recognized under the binocular as main groups as well as for their droppings in the thin sections.





**Fig. 5.** Topsoil/ soil surfaces as indicators for the regeneration stages. It shows the three stages of rapid surface closing, the settlement during months, and the long-time development of leaf layers

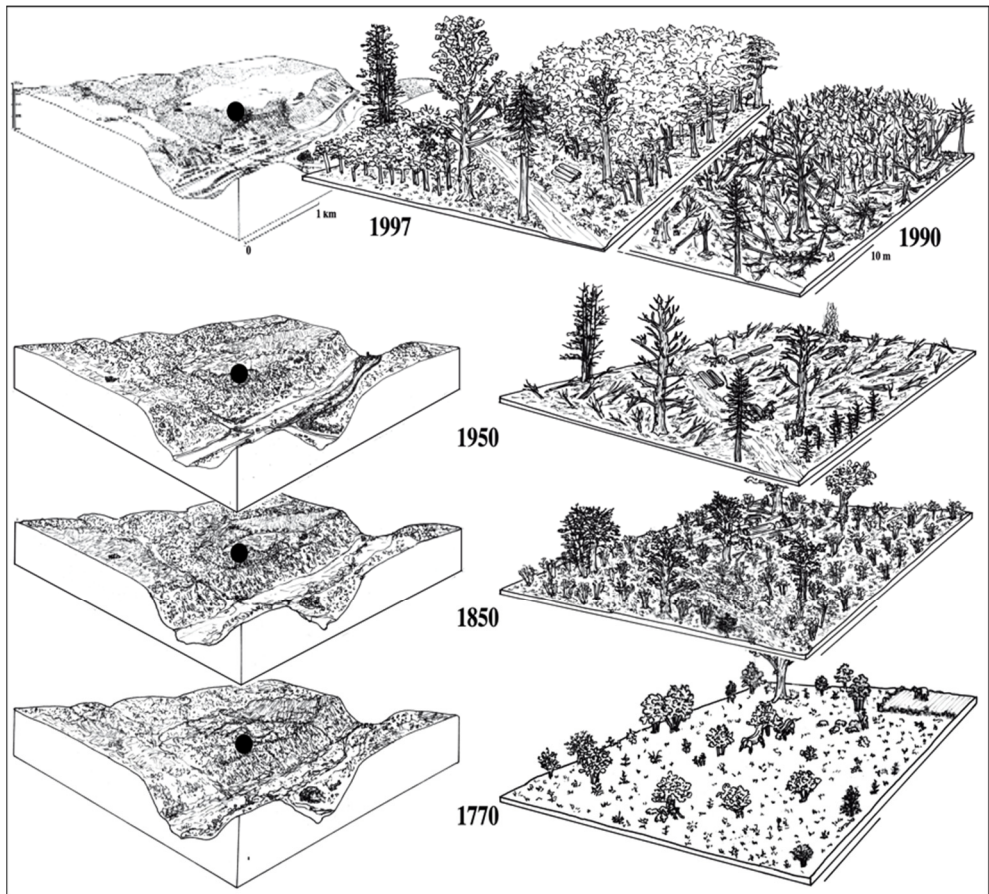
As mentioned above, transects were taken for each plot along the middle line at 15 m West-East in order to give an idea of the physiognomy of vegetation. Each 5 m a structure sample for topsoil was taken too. Together with the maps these transects will give a better idea of the respective plots (see figure 8).

#### **4. DISTURBANCE AND REGENERATION AT THE FORCHTENBERG SITE. THE LONG FOREST HISTORY IN DIFFERENT PHASES**

Forest development and succession stages are of different scales. For the one the short-time cycles develop in decades and for the other the evolution to mature forest takes centuries. Thus, it was necessary to elucidate the long history of the actual test site in order to know about the role of its heritage.

#### 4.1. The forest history of the last centuries (figure 6)

A graphical reconstruction of the last 250 years was based on the interpretation of natural relicts such as old pasture trees, on dendrochronology, on forest maps of 1949, 1970, 1982, and 1992 and on archivalia of the house of Hohenlohe-Öhringen (Beutler 1988). It is paralleled to the general landscape history (Saenger 1957). Four different periods could be discriminated.



**Fig. 6.** The reconstruction of the 250-years landscape- and forest history of the Forchtenberg-test site.

A: The anarchic forest exploitation

It was typical for the 18<sup>th</sup> century. The landscape was characterised by small-scale fields within the three-field-rotation system. The steep slope had wine cultivation and the alluvial plain was used for pasture. The forest saw irregular clearings, pasture and short-time agriculture. Wood cutting and coppicing were often and resulted into a coppice / tailis / Niederwald and an open sheep pasture. The trees were maple, ash, and hornbeam together with roses and blackberry bushes.

B: The regular forest exploitation

The time of the 19<sup>th</sup> century up to the middle of the 20<sup>th</sup> century was still dominated by the small-scale fields in a rotation system. Wine cultivation on the slopes diminished and the alluvial plain was stepwise settled by some industrial plants. The settlements enlarged, and there also was a train up to Forchtenberg town until the 1960s.

At 1805 the forest came under the authority of the House of Öhringen and was transformed into the dual system of coppice with standards / tailis-sous-futaile/ Niederwald with a composition of 70% beech, 25% oak, and hornbeam, maple, or cherry.

C: The modern forest exploitation

The forest was stepwise transformed into the “modern” system of high canopy forest /futaile régulière/ Hochwald by plantation of conifers. However, it got several areas with a composition of 20% beech, 20% fir, 20% pine, 10% larch and 30% of maple, ash, and hornbeam, whereas the greater part of the forest was still dominated by deciduous trees. In the mid-1960s the landscape was characterised by large fields after rearrangements, the replanting of wine on the slopes and the growing settlements. The forest passed to the Schöntal-Forest Authority. It was cleared and replanted with 30% beech, 20% oak and some ash, hornbeam and cherry. In 1990, after the damages of hurricane “Wiebke”, afforestation was done by 30% of beech, 20% maple and some ash, hornbeam, and cherry.

D: The actual forest economy

The present directive of the Hohenlohe –Forest Authority is focussed on the maintenance of the floristic composition. It also is the intention to hold mixed stands both in composition as in age. When the older stage of trees is classified as having reached its economic maximum it will be taken out. However, an autonomous “natural” rejuvenation is appreciated. If there is not a sufficient understory, young trees must be planted. At any case, large free spaces, such as

after complete clearing, should be avoided. However, in case of thunderstorms or large bark beetle attacks it will be necessary to intervene in order to reach the directives. In all, the forest authorities should follow an economic goal (wood production, holding of reserves) as well as to preserve ecological conditions (water, soil, air quality) or recreation items.

In 1997 a 3.5 ha area was passed to the experiment and from that time on there is the chance to follow the traits of autonomous rejuvenation.

#### ***4.2. The short- and medium-time regeneration after disturbance. The first cycle (figure 7)***

The slash-and-burn experiment (see above) provided chances to follow the evolution pathways apart of the forest authority directives and their restrictions.

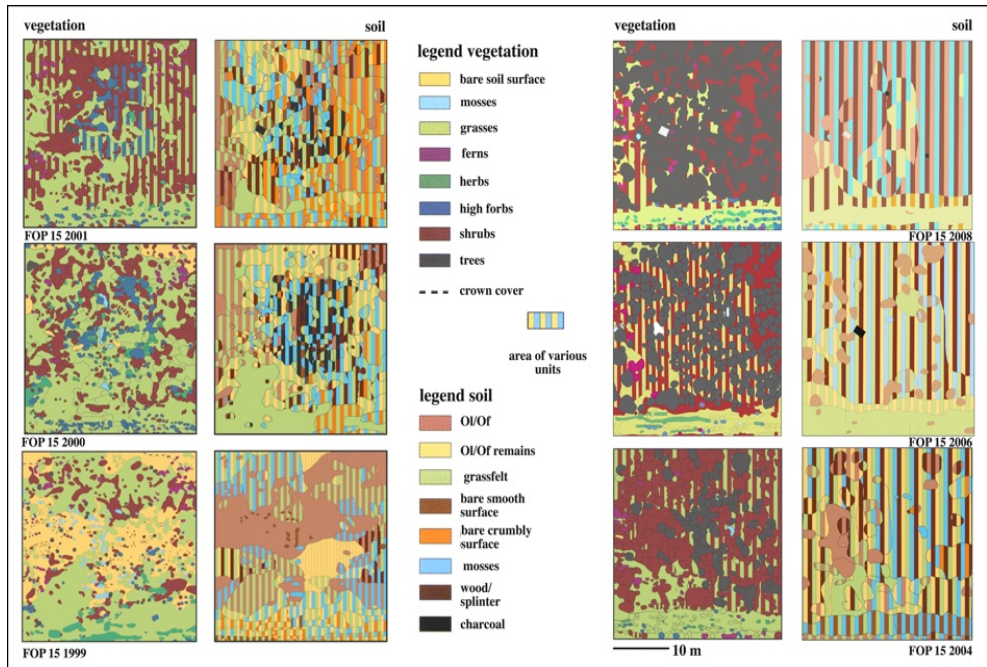
The activities and processes within the experiment comprised clear-cut of the respective plot – complete or incomplete, high- and low-temperature burning, and cultivation with restrictive tillage (see figure 4). Thus, the first two or three years saw various impacts on each plot, which highly disturbed/ destroyed the plant covers, and the upper soil material.

The recovering steps of vegetation and soil after clearing burning and cultivation are explained by the evolution of the plot FOP 15 (FOP: Forchtenberg Plot. For location see fig. 2). The plot shows the classical forest evolution and will be preserved for long time observation as comparison plot within the experiment. Clearing was in winter 1998/1999 and the plot was abandoned after the end of cultivation in 2000. The different regeneration stages are presented both for vegetation and soil surfaces. The first map (1999) shows the situation in summer after clearing but before burning. The surface was rapidly colonised by grasses, high forbs and *Rubus*- shrubs, but large parts still remained unsettled. Soil surfaces depict the heritage of the forest (Ol/Of and its remains) as well as the dominance of the grass felts. The southern part is a forest track, which always showed its own dynamic.

One year later (2000), the plot shows an interfingering of grasses, shrubs (mostly *Rubus*), high forbs – confined to the burned field – and some mosses. Still some small areas remained uncolonized. Soil surfaces depict the burned field by charcoals and mosses. The grass lobe colonising in the Southwest is obvious and it will be visible the following years. The areas of leaf layers demonstrate the forest heritage as well as the shrub evolution. 2001 marks the change to uniformity by the dominance of the shrub-tussock grass (*Rubus-Deschampsia*) unit and the resprouting from stumps. The burned field is still marked by high forbs. Soil

surfaces clearly indicate the burned field by charcoals. Mosses prevail under the *Rubus-Deschampsia*-units, which also support the earthworm activity visible by the bare crumbly surface

Five years after clearing (2004) the plot gets more and more uniform. The *Rubus-Deschanmpsia* units prevail but several shrubs – either from seedlings or from stumps – developed into trees. In soil surfaces leaf layers already dominated together with mosses and grass felts. Charcoals however are completely covered by leaf layers, mosses and grass felts too.



**Fig. 7.** Maps of vegetation and soil of FOP 15 showing the first stages of regeneration and those of early development to a coppice. Finally, the way from diversity to uniformity.

The further development (2006 and 2008) is characterised by the growing of the tree cover. Shrubs restrict grasses more and more - mostly by *Rubus*. The soil surfaces are dominated by the combination of leaf layers, splinters and mosses. Also, the forest track is clearly visible.

Thus, this series of maps depicts the development of the first and second mosaic of recovery. The first represent the evolution of a clearing flora until it is partly destroyed by burning and afterwards incorporated into the second mosaic of shrub and forest recovery into a uniformity of a young coppice. The grass lobe in the Southwest shows, that the first colonisation step may remain visible for long time.

The plot developed to an individual and species rich forest, much more diversified than the previous forest. The process was a mixture of seedlings arrived by wind and animals, continuous growing of seedlings or sprouting already present under the former forest cover and by resprouting of stubs – especially maple, hornbeam and beech. At present it is in a state of rapid growing, high density of individuals and also a high rate of dieback.

#### ***4.3. The second cycle. Recovering after the second clearing, burning, and cultivation***

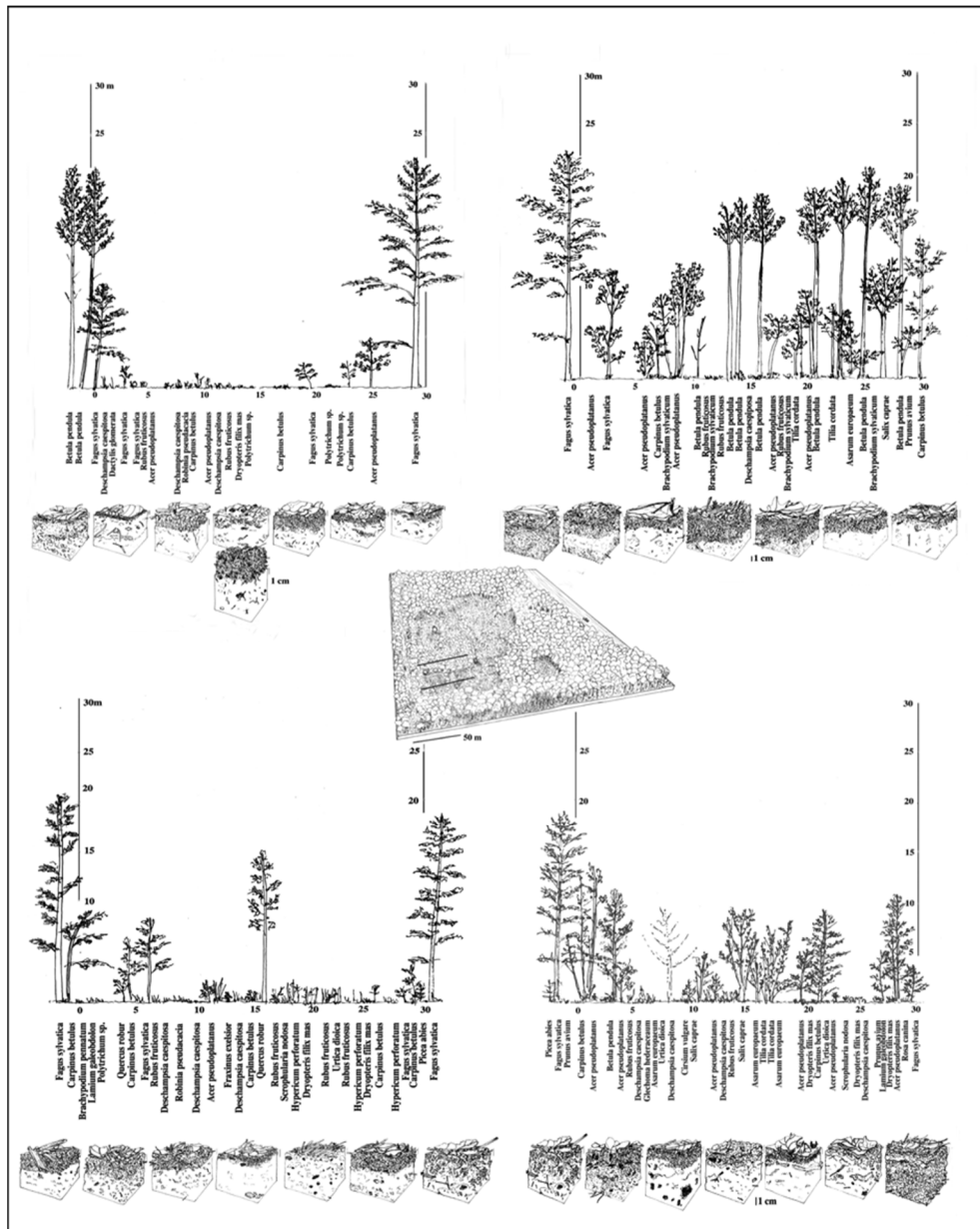
Four plots were chosen for their indicator value of each plot in the succession state. Two of them are characterised by middle or late succession states (FOP15 and FOP22) whereas FOP14 and 21 were cleared recently (14.3.2017, 21.1.2015). Therefore, they demonstrate the initial or younger states of regeneration. Moreover, the plots FOP 15 and FOP22 were cleared completely, in opposite to FOP 14 and FOP 21, which – out of logistic reasons – were only cleared for their central parts. Thus, it will be visible in the different stages of succession (figures 9 and 10; for location, see figure 2).

Transects of FOP 14, FOP 15, FOP 21, FOP 22 were made in order to give the physical aspects of vegetation and soil. Mapping followed the Forchtenberg protocol (s.a.), however, we enlarged the information content. As the tree cover of FOP 15 got almost closed it was useful to specify the tree genera by coloured rings.

##### *4.3.1. Transects on FOP 14, FOP15, FOP 21, FOP 22 (Figure 8)*

Transects are taken along the middle line from West to East of each plot together with structure sampling each five meters. They shall give the physical aspect of the plant and soil cover of the respective plots.

FOP14 is the youngest plot. It was cleared again in winter 2016/17, however not completely. Thus, the edges are settled with old trees. Grasses and ferns dominate the centre. It is visible by the soil structure as in the centre grass felts dominate. By chance, charcoals from the first cultivation were preserved at two places. It was by the dominance of enchytraeids in these parts.



**Fig. 8.** Transects for vegetation and soil structure. FOP 14, FOP 15, FOP 21, FOP 22 – for location see figure 2.

FOP 14 and FOP 21 represent the early stages of regeneration clearing, whereas FOP 15 shows a young coppice 18 years after clearing. FOP 22 indicates a medium stage 10 years after the second clearing within the rotation system of slash and burn.

FOP 15 represents now a high coppice with an undershrub mostly by resprouting maple or hornbeam. Leaf layers dominate the topsoil (see above).

FOP 21 was incompletely cleared again in winter 2014/15. By now, the plot is divided into a forest and in a grass part, as the structure samples depict by leaf layers or grass felts. Obviously, the charcoals present at 20 m indicate the old burning and cultivation zone

FOP 22 was cleared again in 2007 as the first plot for the rotation system. At present, it shows the aspect of an intermediate stage of regeneration with the dominance of young trees and shrubs. At 5 and 10 m the recent and older cultivation is visible by different position of charcoal in the structure samples.

#### 4.3.2. The new vegetation and soil maps (Figures 9 and 10)

The first group comprises the young succession stages (Figure 9).

FOP 14: This plot developed to a mosaic of grass, ferns and some shrubs – mainly *Rubus*. The southern part – the forest track – reacted differently. It shows the grass cover and only some new seedlings of *Rubus* and *Carpinus*. The plot itself depicts two types of heritage: an old one prior to the 1990s, which is shown by groups of big trees, *Fagus* in the Southeast and *Acer* in the western part. The rectangular moss cover in the eastern part points to a fallen old tree in the storm of 1990. A younger heritage is present as regrown after the first clearing in winter 2001/2002, which excluded the eastern rim and the *Fagus-Carpinus* group in the Southeast. This concerns the trees in the northern part of the plot.

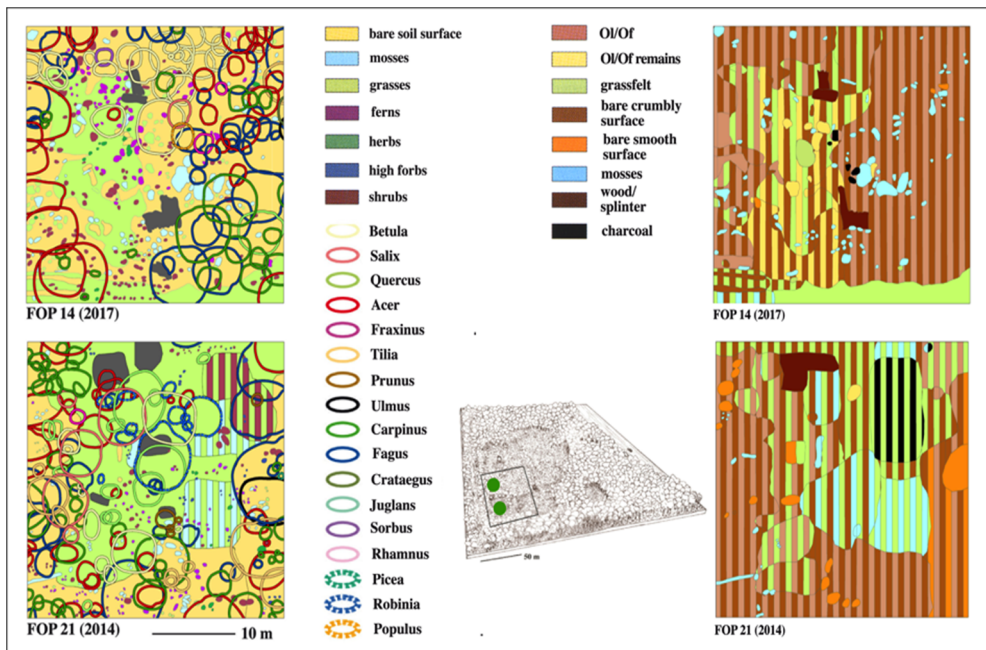
The surface was burned twice in spring and fall 2002 and after cultivation it was abandoned in 2003. It was on that plot that an old birch tree was set free in 2001. From that time on, birches colonised free spaces on the whole test area. On FOP 14 it is visible in the north-eastern edge. Comparable to those colonising is the presence of a single *Populus* tree. *Salix caprae* is an early and singular coloniser too.

FOP 14 also shows the heritage areas of trees, which are characterised by the mixture of Ol/Of and splinter. The remnant leaf layers are mixed with grass felts in the centre. Mosses are scattered, they also indicate an old wind fall. At some rare places the surface got bare and show either the bare surface type or expose the old generation of charcoals near surface, concentrated by enchytraeids or mites. The forest track in the South depicts grass felts, which are mixed in the Southwest with Ol/Of remains of mosses under the tree umbrella.

FOP 21. The plot was cleared for the first time in winter 1999/2000. The clearing was complete with the exception of some single oak and cherry trees.



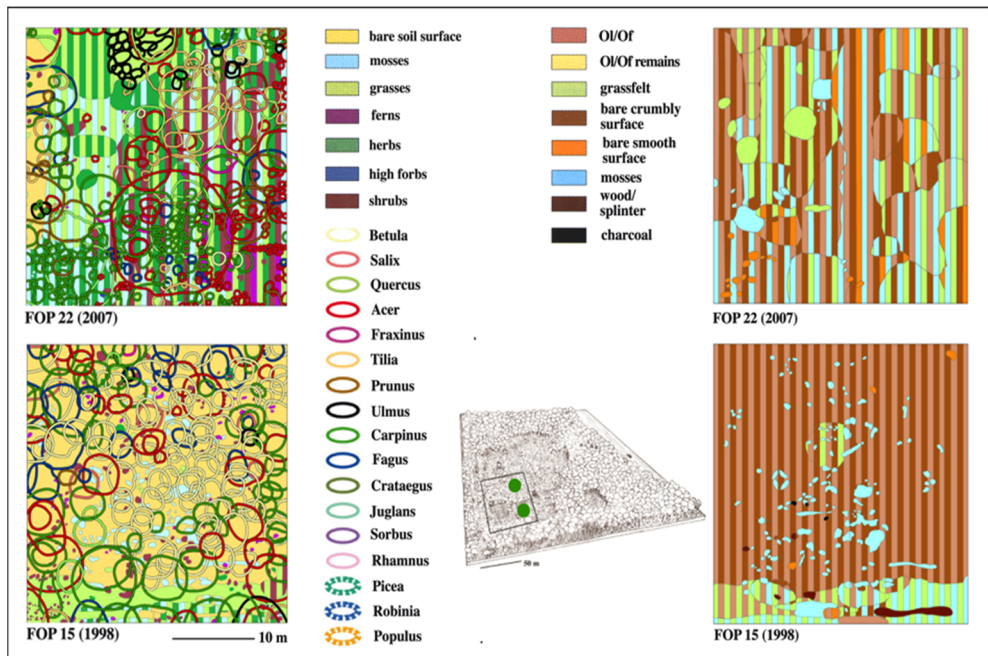
They represent now an old heritage from the 1990s. Burning was done in spring and fall 2000. After cultivation on different places the plot was abandoned in 2001. In winter 2014 the plot was cleared again, however, it was done only in the centre, which created a younger heritage of tree cover in the West, the South and in the East. Burning took place in fall 2015 and cultivation was in summer 2016. The plot shows a picture comparable to that of plot 14. The herb and grass cover started to develop on the cleared surface. The area under the tree cover remained almost free. Mosses are more important than on plot FOP 14. Some single old trees dominate the free space, among them also a *Betula* group. Interesting enough, invaders could settle to that plot such as *Robinia*, which established from several seedlings and also have two generations yet. A single and small *Picea* exemplar only survived under the umbrella of an old *Fagus* tree at the eastern rim. At present it is dead due to the drought of 2018. Among the herb invaders there are only *Solidago* and *Erigeron*. The high forbs are scattered in the southern half of the parcel. They are *Scrophularia*, *Eupatorium*, *Epilobium* and *Hypericum*. The eastern part of the centre shows the cultivation area, which got invaded by *Deschampsia* and *Rubus* after harvest, which could completely cover the charcoals.



**Fig. 9.** Vegetation and soil cover maps of the early stages of succession in summer 2017. They depict the heterogeneity/diversity in the plant cover as well as in the soil cover.

The soil map depicts the young colonisation in the centre and the forest heritage at the western southern and eastern rims. Mosses are concentrated on the centre and in the North. The wheat field still shows the charcoals on the surface mixed with grass felts.

The second group comprises the middle and late stages of successions (Figure 10).



**Fig. 10.** Vegetation and soil cover of the middle and late stages of succession in summer 2017.

FOP 22. This plot is the first, which was firstly cleared completely in winter 1997/98 – with the exception of two *Quercus* and one *Acer* trees. After cultivation for two years, it was abandoned in 2000. In order to start with the rotation part of the project it was re-cleared in winter 2006/07. It was cultivated on several plots for two years and again abandoned in 2008. During the first period the plot was also used for pasture and a S-N fence divided it into two parts. Today, the plot shows the complicated mosaic of a middle state of forest succession. Two types of heritage are present by the old and high trees in the centre and the younger ones at the western rim. Trees colonised differently.

*Ulmus* acted in swarms by seedlings, *Acer*, *Tilia* and *Carpinus* by resprouting from stumps. *Salix* was a coloniser of the second tree generation arriving from seeds and in contrast to the other plots here it could build up groups. The plot is clearly divided by an old fence, which supported the tree colonising. The southern part shows the colonising by swarms of *Acer*, *Fagus* and *Carpinus* seedlings. Under the tree cover also *Rosa* could develop important stands in the shrub layer. *Hedera* is numerous in the southern part under the umbrella of large trees. A mixture of grasses, shrubs and herbs covers the soil surface. Mosses are important, which apparently it is the effect of a microclimate under the dense umbrella of trees and shrubs.

The middle stage of forest succession as also visible by the soil cover. Leaf covers and splinters dominate at the western rim and near the S-N fence. Mosses are generally present due to the microclimate under the crown cover. Grass felts characterise the former cultivation areas in the western part and the part of lower and scattered trees.

FOP 15. The plot depicts the longest series of successions – from 1999 on and it will serve as reference plot for forest development. The transect (see figure 8) shows the double type of regeneration as resprouting from the roots as well as by seedlings. As the crown cover got closed about five years ago, shrubs like *Rubus* were suppressed, as they were in the years before. Some open space in the crown cover allows some single tussocks – mostly of *Deschampsia*. The plot is dominated by trees, which could recover from the roots (*Carpinus*, *Acer*, *Tilia*). *Salix* is among the early colonisers by seedlings, but it remains as singular exemplar. The centre of the plot was colonised by *Betula* in one generation, where birch now dominates without younger exemplars. This took place within the border of the burned area. *Carpinus* and *Acer* always produced new seedlings, but only with minor success. Grasses and mosses dominated the forest track in the South.

The soil cover demonstrates the homogeneity of the dense tree cover. Ol/Of and splinters dominate. Grass felts are only present on a small open space in the centre. Mosses are scattered. They also cover old stems. Open bare surfaces are rare. As in FOP 14 also some places of charcoals are exposed, again the result of enchytraeid activity. The forest track in the South shows the mixture of grass felts, mosses and leaf layers as typical under the tree umbrella.

In conclusion the two figures (9 and 10) depict the evolution of heterogeneity/diversity of elements and structures with a maximum in the middle stages of succession and the change to homogeneity/ monotony in the late stages.

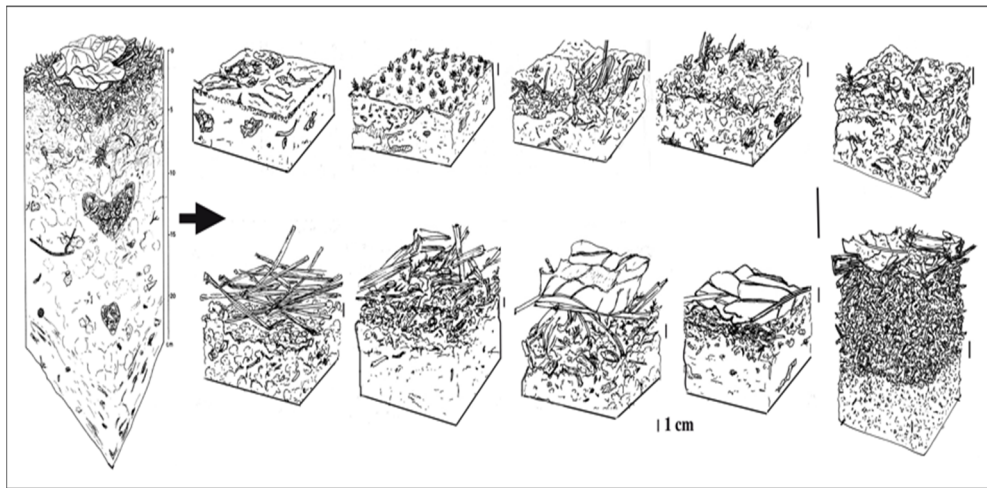
#### **4.4. First conclusions on the evolution steps of soil and vegetation**

This chapter concentrates on the interaction of vegetation and soil. The phenomena of fire and charcoals will be treated in a separate chapter.

##### **4.4.1. The development of topsoil/ soil surfaces during twenty years of evolution.**

When cleared, a forest soil changes rapidly its character (see figure 10). The disappearance of microclimate, the direct insolation and arrival of precipitation and mechanical destruction may lead to raw soil surfaces. They follow the stages of clay sealing / development of algae / bacteria film and a first installation of mosses. An arrival of seeds may lead to a first plant cover and in parallel to bioturbation.

A grass cover forms grass felts, which closes the surface densely and support an intensive crumbling by earthworms. The development of shrubs and trees leads to leaf layers, which indicates the forest environment. Depending on the intensity of alteration it could be an Ol/Of system or in special cases also the Ol/Of/Oh-formation.



**Fig. 11.** The regeneration of topsoil/ soil surfaces from the original forest on after disturbance of clearing. It comprises the early stages of sealing and settling by mosses and grasses with felt development and the cover by leaf layers as indicators for forest (after Schulz et al. 2014, modified)

#### 4.4.2. *The coevolution of vegetation and soil - in the system of repeated disturbance (see figure 12)*

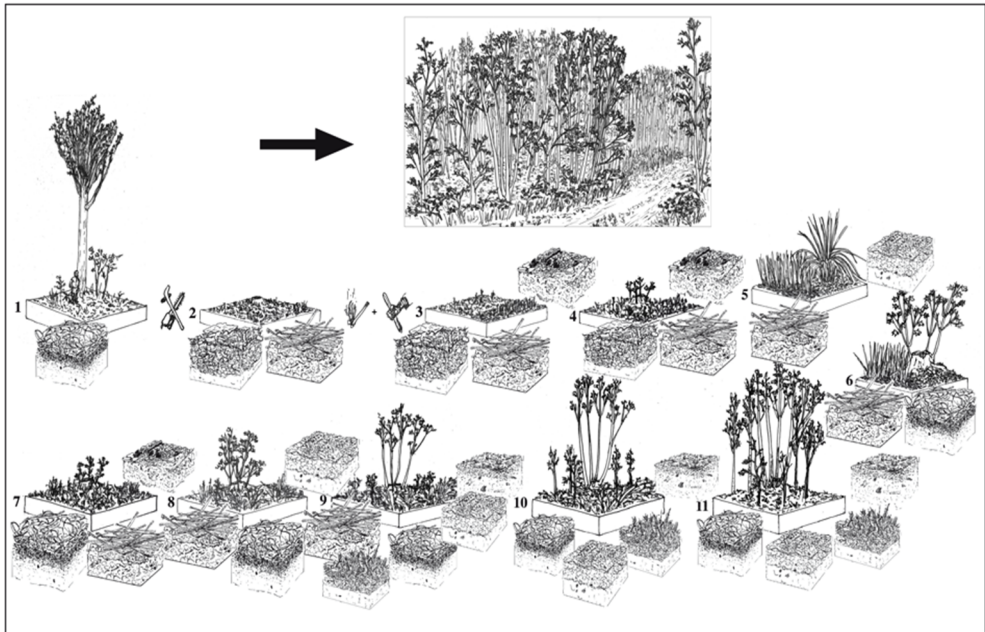
The general trait is the evolution of a double mosaic (Schulz et al. 2014). The first one starts after the clearing with a rapid deterioration and/erosion of the former leaf layers (Ol-Of) forming bare surfaces sealed with clay or algae/bacteria films (1). It is a process of days. A second step is the formation of grass cover, either as clones (cf. *Holcus*) or tussocks (cf. *Brachypodium*, *Deschampsia*) and also some high forbs like *Epilobium* or *Eupatorium*. This mosaic is accompanied by grass felts, moss covers or crumbly surfaces (2). The burning of the plot after about 8 months and the subsequent cultivation destroy a greater part of the first mosaic but initiate a second one. It comprises the development of a grass- and herb-cover, the sprouting of high forbs and first shrubs like *Rubus*. The burned field remains covered with charcoal and free of vegetation for a long time.

Already in the second year the resprouting of some trees from their stubs creates a mosaic of grass-and herb-plains and some islands of leaf cover. Thus, there is a mixture of grass felts, moss cover, bare crumbly surfaces and first leaf layers (4-7). This succession will continue the following years with a development of dense shrub-grass covers (*Rubus-Deschampsia*), the growing up of the resprouting trees and the installation of pioneers from seedlings (*Salix caprae*, *Fraxinus*, *Acer*). *Betula*, however, needs an old tree exposed to the open plots before a mass of seedlings may survive in the plots. It finally gives a second mosaic developing into a high and dense coppice within 15 years (8-11).

#### 4.4.3. *The ruderalisation and its consequences*

From a certain time and openness of the test site, the high forb unit became stable about six years after the first clearing. In contrast to ordinary clearing florals, *Cirsium arvense* formed monotonous stands on several plots and dominated over years. Figure 12 describes this phenomenon for FOP 16. The plot was cleared in winter 2002/03 and repeatedly burned 2003, 2004, and 2005, each time on a different surface.

The maps for 2003 depict the predominance of grasses and high forbs. Shrubs – mostly *Rubus* – were scattered. The *Rubus-Deschampsia* unit remained close to the western margin. Soil surfaces were characterised by grass felts, mosses, splinters and bare crumbly surfaces indicate the intense activity of earthworms.



**Fig. 12.** On the way to coppice. Combined diagrams of vegetation stages and soil surface types for the regeneration after clearing to coppice development. It also shows the function of grass domes for intense earthworm activity caused by the constant microclimate beneath the tussocks (5).

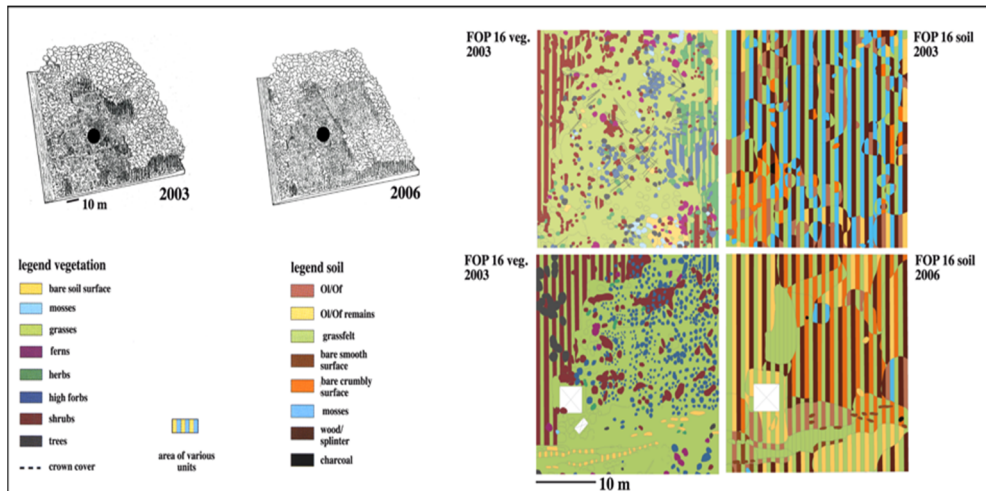
Three years later the situation remained comparable. Grasses and high forbs dominated, the *Rubus-Deschampsia* unit remains in the western/north-western part. The soil surfaces are again characterised by grass felts splinters bare crumbly surfaces, which are supported by the microclimate of the dense high forb stands (*Cirsium*), and already leaf layers. Trees developed from the resprouting at the western margin.

This situation – hindering the installation of tree seedlings – lasted to 2008, when pioneer trees such as *Salix caprae* could well evolve.

Finally, it could modify the general picture of succession given in figure 12.

The “Ruderal Way of succession” shows the same scheme of development for the first stages (1-3, see figure 11). After the end of cultivation, the high forbs already did develop as strong that they could form dense thickets with a humid and stable microclimate. They also had a dense under storey of grasses, mosses and herbs - mainly *Glechoma hederacea*. *Rubus* was slowed down in colonising these areas and single seedlings of *Acer* or *Fraxinus* were asphyxiated.

Resprouting trees from stumps developed (Figure 13, 4 to 6), as it was typical for the other fields, but the implantation of all other trees was impeded – at least four or five years long. Only some *Fraxinus excelsior* hordes could establish themselves because they followed the same strategy in building up some dense stands as the high forbs and enabled a humid microclimate too.

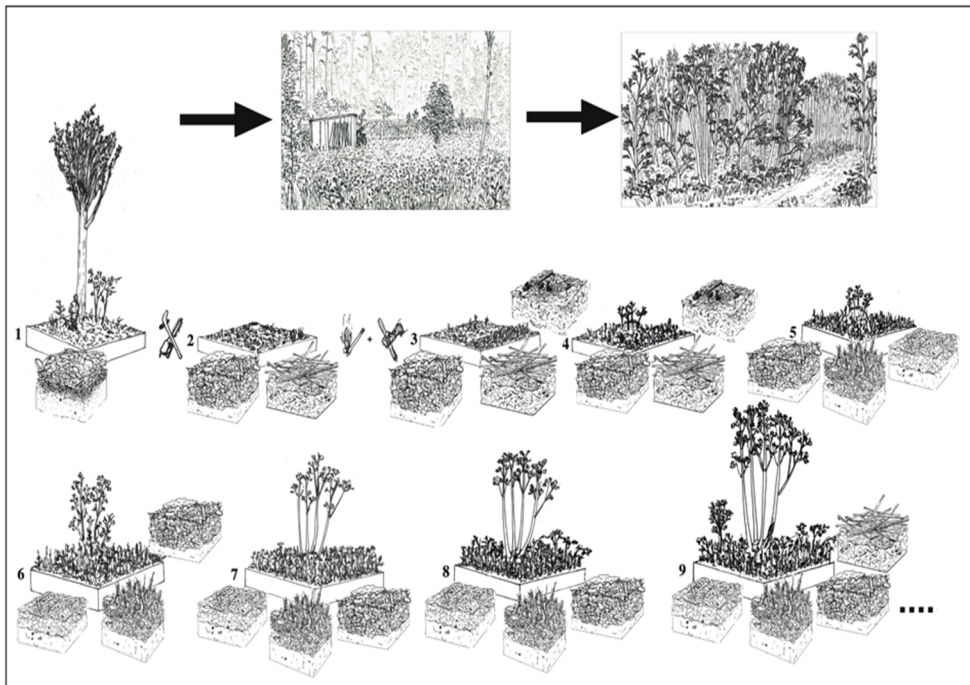


**Fig. 13.** The ruderal development. The figure shows the general state of the Forchtenberg test site in 2003 and 2006 and the evolution of the plot FOP16. The intermediate state of high forbs – especially *Cirsium* – got persistent for several years and impeded the establishment of seedlings.

The slow development of *Rubus* groups provided chances for some seedlings (*Acer pseudoplatanus*, *Salix caprae*, *Fraxinus excelsior* or *Prunus avium*). The following stage (7) was characterized by a rapid development of baskets from the resprouting trees and of some young trees, which managed to overtop the thickets. Later on, it caused a mixture of high reaching baskets and some isolated bushes/trees over the still remaining thickets, in which *Rubus* could reach up to three metres height. Their understory remained the same: some grasses, mosses, and mostly *Glechoma*, *Urtica dioica* and *Sambucus racemosa* became numerous, indicating an elevated nutrition reservoir.

It also incorporated elements of the *Aegopodium-Urtica* units (*Aegopodium podagraria*, *Lamium maculatum*, *Urtica dioica*) or those of forest margins such as *Alliaria petiolata* or *Glechoma hederacea*. Further on the *Onopordon* thrifts may have contributed *Cirsium arvense*, *C. vulgare* and again *Urtica dioica*. Finally, these ruderal thickets might have evolved out of the classical clearing and forest

margin floras and getting autonomous out of the rapid evolution of *Cirsium arvense* into long-time persistent *Cirsium - Rubus*- thickets. It was mentioned as being characteristic for areas with better soil conditions – in his case loamy soils [Dierschke 1988, Deil frdl comm.], but it was also stressed for the affinities of *Cirsium*-communities to alluvial environments. It could also be explained by the microclimate in the thistle stands. These phenomena are different to the initial clearing floras (see Ewald et al. 2018) and must be considered as a second ruderalisation.



**Fig. 14.** The regeneration of topsoil/ soil surfaces from the original forest on after disturbance of clearing. The ruderal development of persistent high forbs (6-8) impeded the establishment of seedlings for several years. However, resprouthing from stumps continued (after Schulz et al. 2014, modified).

**4.4.3.1. Comparable features of ruderalisation.** In the forests nearby, several areas were thrown down by storms in the year 2000. They have a comparable size – about half the test site, and, thus, they may serve for comparison to the features on the test site. Also, the original forests were comparable to the Forchtenberg-Büschelhof one - with the exception of one *Picea* areal. After the



storms, these plots were all cleared of fallen stem. Afterwards they were designed for succession to an acceptable (for forest exploitation) tree composition. In case of doubts they were actively planted. Normally one counts in this area on a development to a forest within 10 years. However, some of these clearings were designed to a later afforestation or simply were forgotten. They all showed a development of dense thickets consisting of *Rubus fruticosus*, *Galium odoratum*, *Cirsium arvense*, but also *C. vulgare*, *Stachys silvatica* and grasses like *Deschampsia ceaspitosa*, *Dactylis glomerata* and *Brachypodium sylvaticum*. *Urtica dioica* was regularly present. Only a few bushes like *Sambucus racemosa* or *Salix caprea* could establish them and survive. However, near the margins of the forests several *Fraxinus excelsia* hords-and-thickets could grow up to about four metres height. Resprouting of trees was not a common phenomenon with the exception of some *Acer pseudoplatanus*-exemplars. *Betula* is present but it does not show important stands. Areas situated in depression have a notable amount of ferns (*Dryopteris filis-mas*). *Digitalis purpurea* was numerous on the plot of a former *Picea* plantations. Some rows of *Quercus petraea* and *Abies alba* were planted on one area in 2004. However, they were overtopped by the *Rubus* thickets and just only survived afterwards. Interestingly, also some thickets of *Cirsium arvense* evolved in the centre of some of these clearing areas, which reminded of the Forchtenberg site.

These vegetation units are rarely discussed in literature. However, the rare information in literature may also come from the fact, that these evolutions of persisting clearing/ruderal floras normally provoke intensive counter-measurements from the forester's site. There is a report in the "Natural Forest Reserves" in the Hunsrück-Mountains and Palatinian Forest / western Germany (41), which mentions these thriffts on storm affected areas with " a certain phlegm for successive changes". The authors also reported that these vegetation types mostly developed on plots, which were cleared from the wood thrown down by the storms. It got evident [42], that on clearing plots the soil surface is as much opened and disturbed by removing wood, that elements from the seed bank will be favoured among them *Rubus* sp., or *Juncus* sp. There also is enough open space for elements with favourable seed dispersal such as *Epilobium* or *Betula*. They ranged wild fires into the same category. Chances of an exploitation of secondary successions after a severe wild fire of a *Pinus-Betula* forest in north-eastern Germany were discussed in a different way (Stähr 2012). Areas cleared from the burned wood showed after eight years a succession of bushes and trees near to an exploitable forest. On plots with decaying stems, however, some pioneer trees established with well-developed crowns above a dense ground flora, which impeded a further rejuvenation of trees. Anyhow, these ruderal phenomena are not uncommon, but normally they are not acceptable for the foresters, because they spoil the production time of trees. Their answer in most cases is a clearing of the high forbs. Thus, the development on the test

sites gives a good model of succession stages, which in normal forestry is not tolerated and counteracted. It is certainly one reason why these phenomena are rarely discussed in literature.

#### **4.5. Intrusions of exotic elements during regeneration**

The number of “exotic” tree species is very low. Only *Quercus rubra* settled in numerous exemplars. *Robinia pseudacacia* was successful on three different plots. Conifers are very few. *Pinus silvestris*, *Larix decidua* or *Picea alba* arrived late in the succession plots, although they are present at the edges of the test site (see figure 1). Thus, even ruderalised by high forbs, the test site remained in a forest dynamic. As tillage was restricted to a short period only, the high forbs – especially *Cirsium arvense* – were able to colonise rapidly the respective plots due to their dual strategy combining a high seed production with a vegetative expansion by rhizomes. *Solidago canadensis* was only successful on one plot (7), however, it is restricted by the *Rubus* bushes.

### **5. THE IMPACT OF FIRE**

Fire is a traditional tool for landscape management (GFMC et al. 2010, Goldammer and Page 2000, Goldammer et al. 1997). Different types of fire and their consequences for the soil cover are analysed both for the slash-and-burn experiment Forchtenberg as well as for the forest fires site in NW Romania.

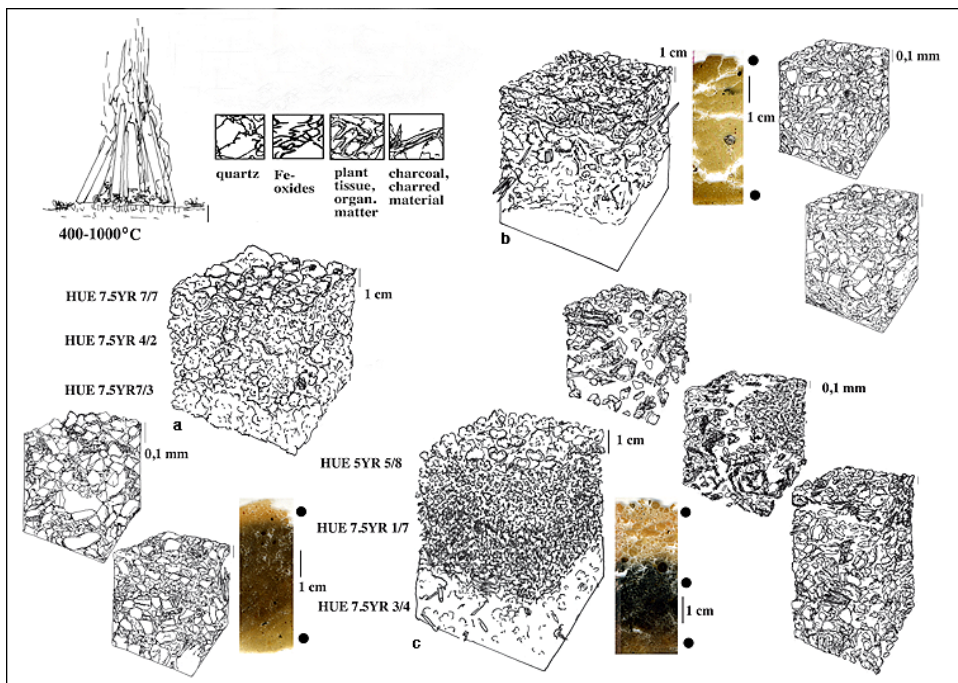
#### **5.1. The burned topsoil/soil surfaces at the Forchtenberg test site**

As mentioned above two different types of burning or temperature impact existed on the experiment plots. Pulling of the inflamed roll of branches caused a mosaic-like impact. It ranged from slight heating of the upper centimetres of plant cover and soil with only light damaged to a complete destruction of organic matter and sintering of the loess material. Temperature measurement during operation showed values between 70° and 200°C for the surface near material (Ehrmann et al. 2009, Rösch et al. 2011). However, refraction measurements pointed to a heating up to 900°C (49). It may be explained by the attraction of cold air from the sides, that these temperatures could not affect the soil surface itself (see figure 16). The “alimentation” fires – to produce enough charcoals for the burning roll - were active for more than five hours and affected the loess material more intensively (see figure 15). Estimations from the degree of cementation and from the colour of the burned loess material range from 400° to 900°C (Hartkopf-

Fröder et al. 2012). They are based on own burning experiment of the forest soil material.

### 5.1.1. Effects of high temperature burning in the Forchtenberg experiment

In 2011 – three months after the burning – some structure samples for micromorphology were taken on the alimentation fireplace in FOP3 (see Figure 14). Sample “a” was intensively heated and transformed into a brick, sample “b” got a less intensive heating and showed a minor consolidation. Sample “c” came from the alimentation fire on FOP 11 in 2012. It also was completely cemented, however, with a less consolidated structure. All samples were analysed for their structure under the stereomicroscope, also thin sections were made. Sample “a” depicts a dense package of quartzes in the upper part and organic matter completely disappeared. A web of iron oxides developed and quartzes are cemented. In 3.5 cm depths some organic matter remained between the quartzes, perhaps due to an isolation effect of the upper “brick” section.



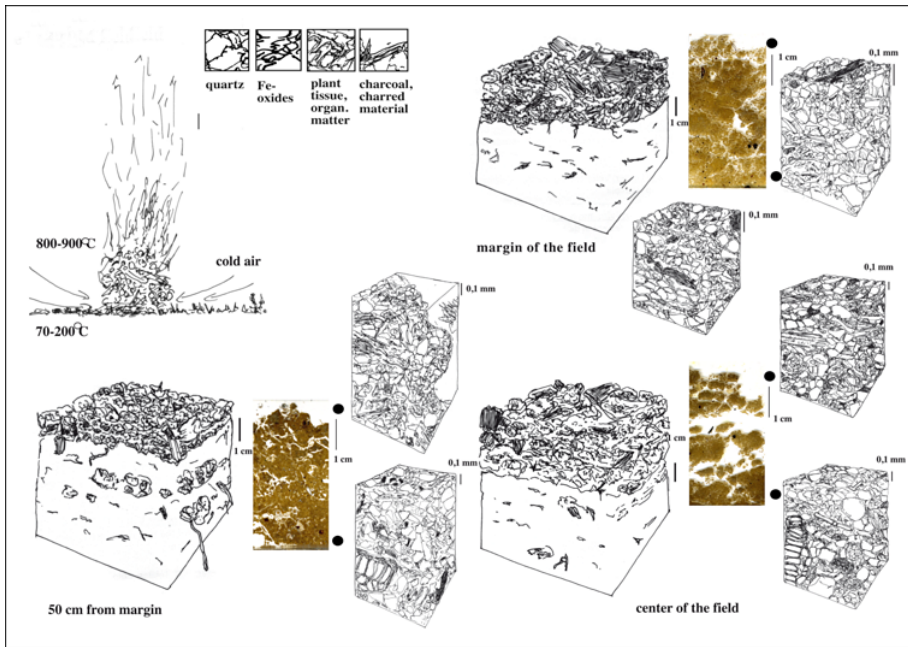
**Fig. 15.** High temperature burning. A combination of structure soil samples and thin sections. The figure shows the dissection and / or cementation of the quartzes and the condensation zone of soot above the original soil material (after Schulz et al. 2014 modified).

Sample “b” is intensively crumbled with a dense quartz package and an iron oxide web. Some charcoal pieces are incorporated. However, the material was not transformed into brick. The lower part (3.5 cm) is condensed too, but still some plant tissues are preserved. Both samples have a sharp border between the burned upper part and the original loess beneath. Sample “c” shows similar features, but the dark middle part may represent the condensation front of volatile C-molecules during fire (Hetsch 1980, Bührle et al. 2011).

These observations confirm former conclusions (Bauer 1968, Varela et al. 2010) that temperatures higher than 400°C are necessary to destroy soil aggregates and lead to condensation and, thus, to augment the water repellence. There is a condensation level of soot, which did protect the organic material in the lower parts of the soil. The evolution of this intensively burned material may be considered as “neof ormation”, because all the organic material and so the seed bank too was burned and the siliceous material also got a new structure as a parent material. The development could be followed on several alimentation fireplaces. It started from a pulverised or fragmented material to a first sealing of clayey or silty material. This took several months. A similar time was necessary for a slight settlement by algae or fungi. Mosses only appeared after more than ten months. After these long phases of transformation, topsoil will continue in those directions already explained for the non-burned soil surfaces (figure 10).

#### *5.1.2. Effects of low temperature fire. The burned field in the Forchtenberg experiment*

Fire impact on the burned field was very different depending how long the burning roll was present at the respective places. Only moderate damages occurred at the margins of the field, and some mosses still remained at the surface. The loess material is not consolidated and incorporates many pieces of charred material, which is also the case for the sample at four centimetres depths. The sample from half a meter into the field shows a loose mixture of crumbs, root-remains, and an ash - charcoal cover. The surface has open fissures with some charred material. At 4 cm-depths root-structures are still visible. The material from the centre of the burned field has a loosely crumbled structure is loosely and shows a bare surface with some charcoals. Roots still remain. The package of the loess is not as dense and it incorporates a lot of charred material in the upper millimetres. Some plant tissues are present in about 3 cm-depths.

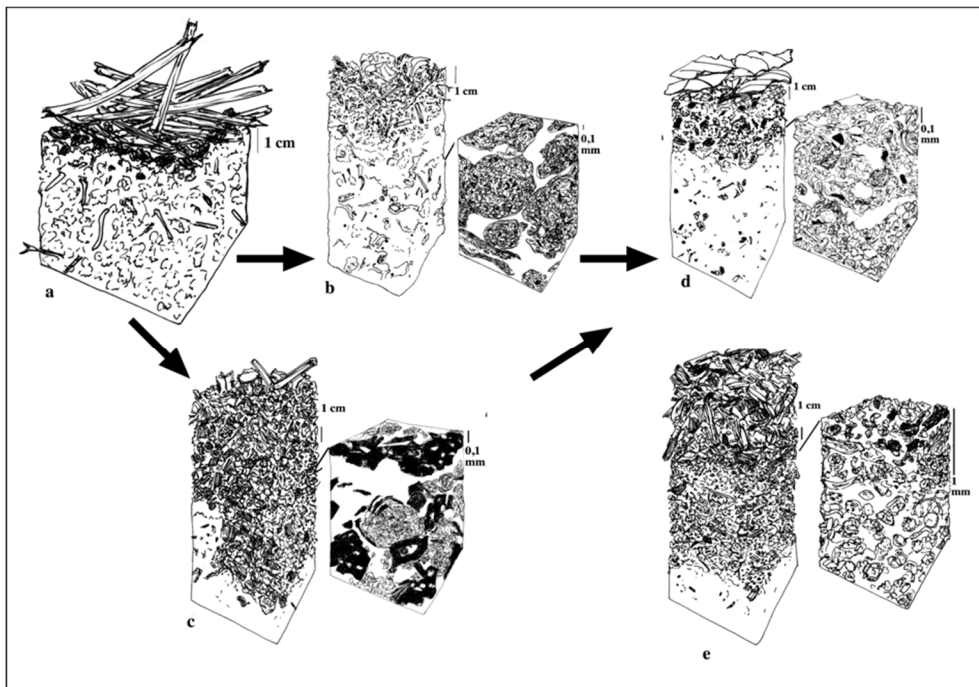


**Fig. 16.** Low temperature burning. A combination of structure samples and thin sections. The samples show the charcoal layers on the field, the clear divide between the loose overlay and the compact soil material and the preserved-survived organic material after the passage of the fire roll (after Schulz et al. 2014, modified).

## **5.2. The evolution of topsoil/soil surfaces and the fate of the charcoals, seen from the Forchtenberg experiment**

The small-scale mosaic of the burned fields induced a variable evolution. During the first years of the experiment the surface remained bare unless some grasses or mosses could directly recover. Normally, it took several months before single grasses or herbs could establish. The question of seed bank interaction, however, remains open. The next stages were similar to those schemes already mentioned above. Grass felts changed to leaf overlays. Grasses like *Brachypodium* or high forbs like *Cirsium* established themselves very early and persisted on the areas of ruderalisation, despite some weeding on the cultivated plots. Charcoals got weathered by swelling and shrinking or by frost action; for the most, however, by the uptake of earthworms. They displaced them vertically to more than 20 centimetres depths in about 11 years (see figure 17). However, there were also accumulation of charcoals near and on the surface, which may persist more than ten years. In these cases, the soil structure completely changed. The crumbs made

by earthworms were replaced by smaller and densely packed aggregates, as it was detected by micromorphology. As already explained above, the main goal of micromorphology was structure. Thus, it was not possible to destroy the soil sample in order to isolate the soil animals for determination. However, the main groups were easy to observe and to detect in the original samples as well as by their droppings in the thin sections. Enchytraeids, mites, and collembols colonised regularly these accumulations. In all, it represented a dense mixture of some greater charcoals, grey to black aggregates of Enchytraeid and mite droppings as well as small and deeply weathered and densely packed charcoal pieces. Often, they showed sharp limits to the loess transformed by earthworms. The surfaces of these accumulations were either bare and fragmented or covered by mosses or leaf overlays.



**Fig. 17.** The taphonomy of charcoals. After the coverage by grass felts (a) the development of charcoals depends on the influence of soil animals. Earthworms – visible by their droppings – will displace them vertically (b). Enchytraeids/mites/collembols will concentrate them near the surface and weather them in situ (c). At places of recultivation – within the rotation system – the loose charcoals layer by enchytraeids (d) is distinct from the soil beneath influenced by earthworms. Finally, it is a model or surrogate for an Ap. Ants (e) avoid charcoals for their subterranean constructions, but use them as material for their subaerial buildings.

The difference of weathering and bioturbation of soil/charcoal material by earthworms on the one side and by enchytraeids, mites and collembols on the other side was already described by (Carcaillet and Talon 1995, Topoliantz et al. 2000, 2006) from the temperate regions as well as from the tropics. Here it was characterised as the main weathering process leading to “terra preta do indio” (Glaser 2007). The causes for the parallel presence of these different taphonomic processes of charcoals remain as an open question. Might be, that there is a succession, in which at a given time the enchytraeids, mites and collembols take over sites formerly colonised by earthworms. On the test site, these accumulations were detected on pseudogleyic Luvisol, however, on a sandy loess material.

These factors may unite as favourable conditions for enchytraeids, collembols and mites. They are known as feeding on slightly rotten biomass in the lower part of leaf layers forming moder or raw humus as well as secondary feeders of earthworm droppings too. Their ph.-tolerance is higher than that of earthworms (ph values 4.6-5.7), accepting ph values of 3.2 in a beech forest of Solling/Central Germany (Weigmann 1968, Zachariae 1994). Also, a higher pore volume is necessary as mites and collembols are not digging organisms. The structuration factor of these communities plays an important role (Blackford 2000), because enchytraeid-droppings are very stable. Finally, in terms of soil development it might be considered as a formation of moder on an exotic substratum.

There is also another implication (Clark 1988). The linear relation of depths in the soil profile and the age of charcoal seems to be only one model among others. It also could be that the transport of charcoals flitters from a burning site is not only a short time process as proposed before (Clark et al. 1989, Ohlson and Tryterud 2000). It also could be that the mixture of earthworm-weathered and enchytraeid-weathered could well influence the charcoal deposition in lakes or ponds after erosion/transportation in a parallel way. That should be considered for age estimations.

The third animal group affecting soil is ants. They regularly transform the topsoil material into a loose but stable kind of mineral/organic mull. It is a very typical structure actively formed by the ants in chewing and mixing the mineral and organic material and building a web out of it. It destroys all former structures and creates a monotonic new one (Frouz and Jilkova 2008). However, in the Forchtenberg test site ant-nests became numerous only in the last five years. One place allowed observation of the ants structure of soil material in direct contact to charcoals of a burned field. It became obvious, that ants use charcoals as building material for their subaerial constructions. However, they avoid them for the subterranean buildings.

## **5.2. Disturbance and regeneration at the Leghia wildfire site. Comparison with the Forchtenberg observations**

At the Leghia- site we concentrate on transects, pedology and micro-morphology.

### *5.2.1. Decay and recovery*

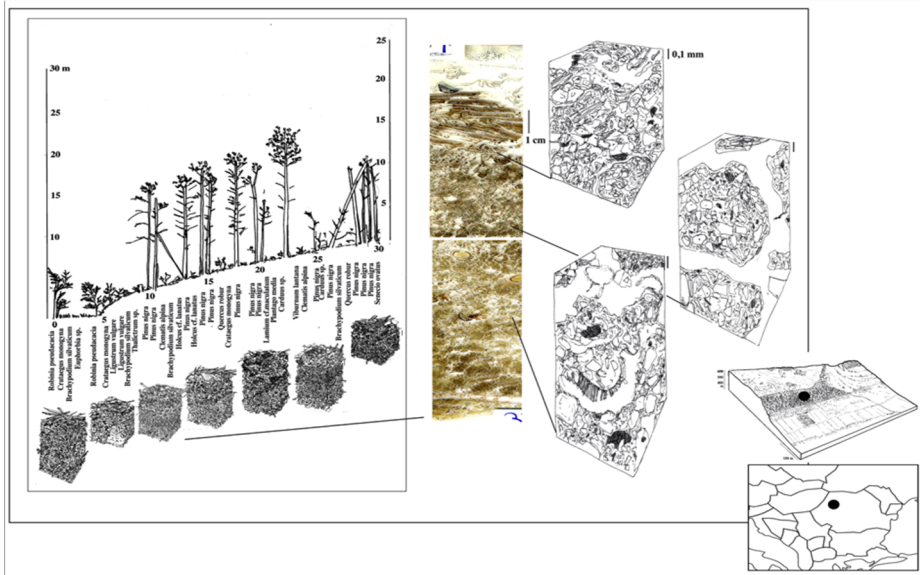
Two processes are active simultaneously. This is the decay of the burned pine stands and the regeneration of vegetation and soil. Trees are falling down and start to decompose slowly and in the same time vegetation recovers.

The undershrub recovered remarkably and is characterised by some submediterranean elements like *Ligustrum* or *Cornus* shrubs. New seedlings belonged to deciduous forests and some dense stands of maple could develop.

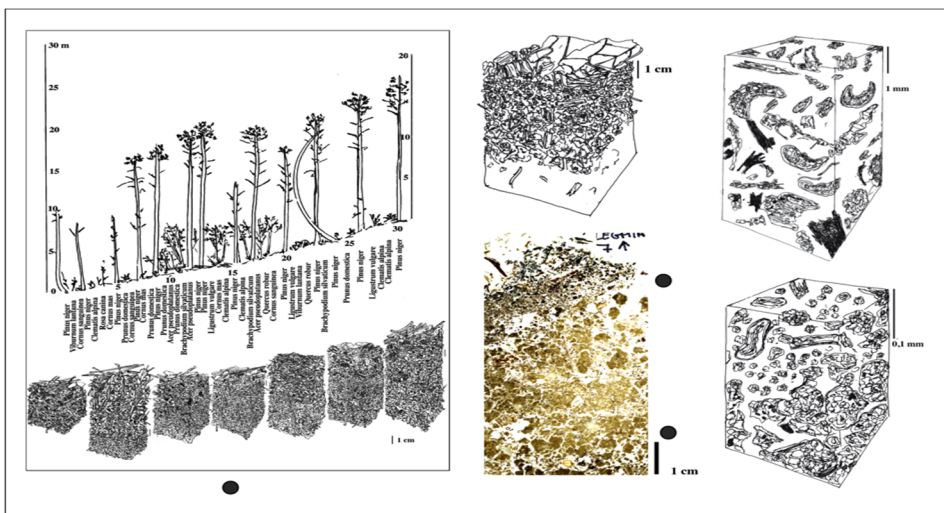
The Leghia site depicts well that within four years the fate of the charcoals depends on the type of vegetation and of soil animals. Deciduous shrubs support the earthworm activity whereas the pine needles and splinters favour enchytraeids and mites. They produce small edged crumbs and millimetric droppings full of microcharcoals. Figures 19 and 20 will explain these processes. After the ground- and crown fire a new formation of  $O_1/O_f/O_h$ -layers took place and so, an accumulation of fuel again. It consisted of needles, cones of twigs and bark with a variable content of macrocharcoals. One can discriminate enchytraeids and horn mites by their droppings. However, those of earthworms are rare. Figure 18 represents the lower transect with the mixture of deciduous bushes (*Robinia*, *Cornus*) and the burned *Pinus*- stands with living and dead exemplars. Thin sections of a soil sample beneath a pine tree show the loose charcoal pieces in the upper part and the consumed and smaller ones in the different droppings. Thus, there is a tendency of moder- or  $O_h$ - building, which holds the coarse charcoals near the surface. One may also observe the development of different layers of loose and edged enchytraeid-crumbs with evenly distributed microcharcoals. These two features may be due to the contrasting seasonality of the site. Desiccation during summer may disintegrate the loose system of fine crumbs, only fixed by roots.

During the wet seasons the material may swell again. The repetition of this process will lead to a continuous grounding of charcoal. However, as visible by the double  $O_h$ -layers, slope erosion will also play a certain role. The transect up Figure 19 shows that a group of *Acer*-trees already induced a stronger differentiation in the soil structure (see figure 19).





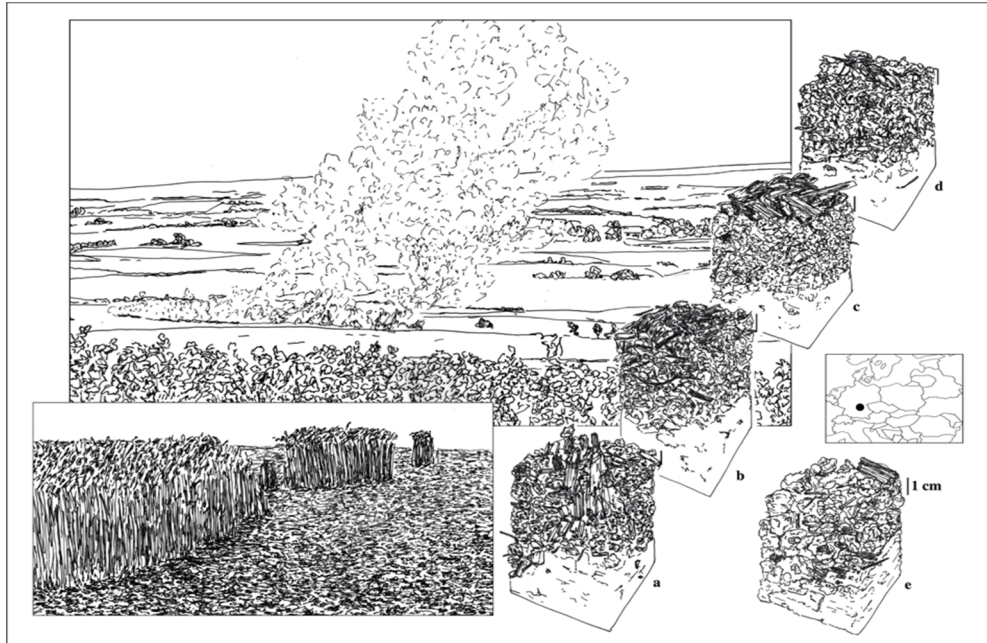
**Fig. 18.** Transect of vegetation and soil on the lower slope of the Leghia wild fire site (for location see figure 3). It is visible that only seedlings from deciduous trees recover. The moder-sample depicts the needle packages, the droppings of enchytraeids and the general presence of charcoals.



**Fig. 19.** Transect of vegetation and soil on the middle slope of the Leghia wild fire site (for location see figure 3). One moder sample beneath an *Acer-Fraxinus* group in the centre depicts the loose structure by Enchytraeid- and mite-droppings and needle- and leaf-remains in the upper part. Charcoal is generally present.

### 5.3. Fire in the open land

In the intensively exploited cultural landscape of Central Europe, non-intended fires are rarely to discriminate from fires originated by accidents or by exploitation. Three examples from Germany and from near the Leghia cuesta will describe these phenomena.



**Fig. 20.** The burning wheat-field at Seinsheim near Kitzingen, northern Bavaria. Note the enormous cloud of smoke and ashes as well as the structured field by clearly limited plots of unburned wheat in the ash field. Topsoil/soil surface diagrams depict the situation between the unburned stems (a) and on the burned field (b-d). The block e shows the situation at the margin field, where charcoal flitters lay between the loose crumbs.

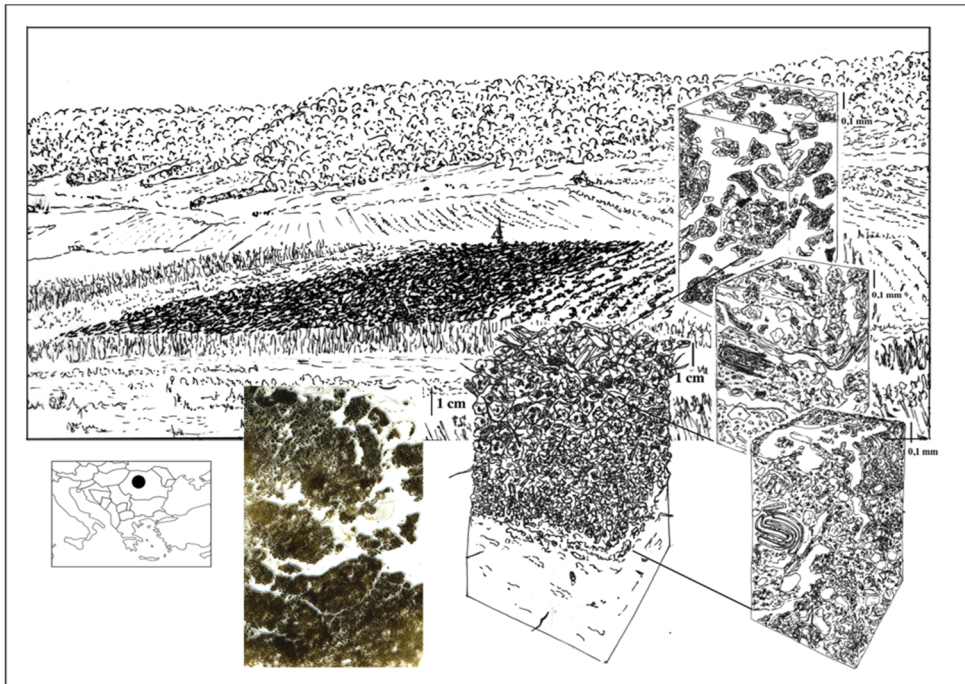
#### 5.3.1. The Seinsheim fire in summer 2013

In August 2013 one could observe near Seinsheim (Kitzingen region, N Bavaria) that a great wheat field (about 1 ha) took fire on a very hot afternoon. Flames did run rapidly over and reached about 8 m height. There were clouds of ash up to about 25 m. Astonishingly, it gave a mosaic of completely burned surfaces and stands of dried but not burned wheat with sharp borders to the burned areas (figure 21).

The soil surface was bare or covered / scattered with fusiform, millimetric and volatile coal particles. The soil was cracked and some charcoals particles were filled in these cracks down to 4 cm. As many of the wheat stems were also burned down to about three cm below the surface, it may explain that charcoal also occur in the upper soil from these phenomena. Anyway, the charred particles were small, very light in weight and easily blown by the wind.

### 5.3.2. Intended fire on open land. Burning of stubble fields and flaming of pastures

Flaming of pastures or burning of stubble fields is still common practice in large parts of the Carpathian basin. It serves to get rid of useless and dead organic material and to provoke the sprouting of fresh grass for pasture. The results of flaming could be observed and analysed on two sites near the forest fire site at Leghia, Transylvania (see above).



**Fig. 21.** The flamed wheat field near Gârbău, western Transylvania. It shows the small structures of the cultivated land, the flamed area after harvesting and the topsoil/soil surface with a regular presence of charred material in enchytraeid-crums and an  $A_p$ -horizon. The two block diagrams at the right show the situation after one year. The clayey soil was condensed after the summer months and showed almost no structure.

*5.3.2.1 Flaming of stubble fields.* A burned wheat field near Gârbău, about 10 km east of Leghia (figure 21) was sampled for soil structure and micromorphology in September 2014. The samples were consolidated afterwards and transformed into thin sections. The charred material was densely distributed within the enchytraeid crumbs and their droppings. Below four cm there was a sharp change to the consolidated material beneath, depicting a clear  $A_p$ -horizon. In contrast to fire use in forests the charred material comes from grasses. This coal is fusiform, millimetric and very volatile. The situation also illustrates clearly the effects of fire on soil (Certini 2005, Pomel and Salomon 1998). It leads to a disintegration of soil aggregates, a loss of fines in the upper millimetres, a destruction of organic matter or its mineralisation as well as a cracking and subsequent mulching of the upper centimetres.

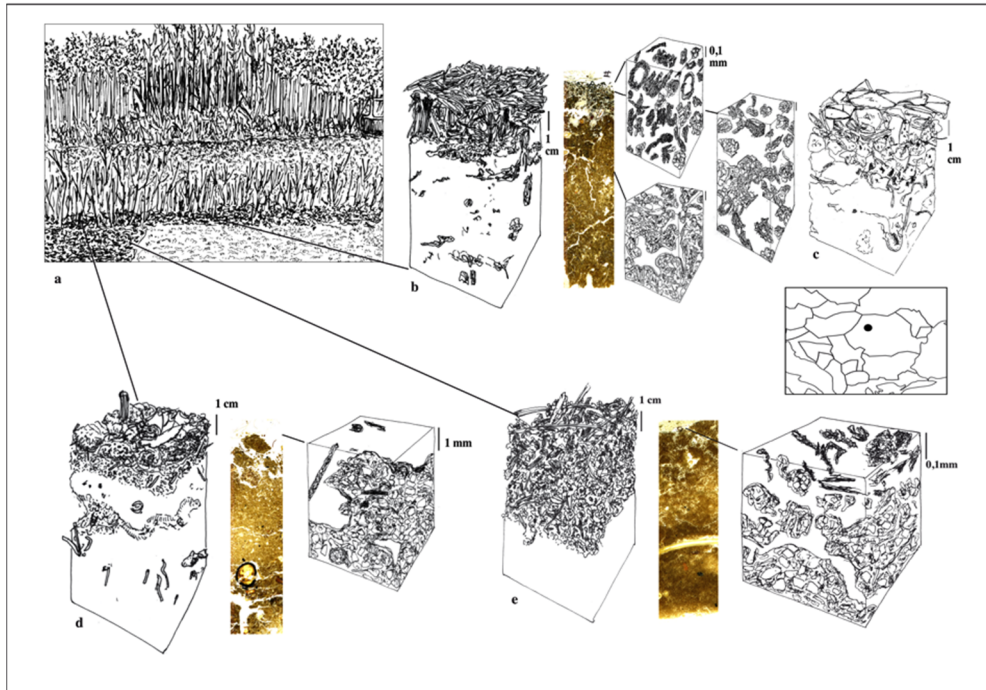
*5.3.2.2. Flaming of shrub and pasture.* The second example was an extensively used pasture below the cuesta with the burned forest near Leghia (figure 23) and the soil surface beneath a *Cornus*- shrub. It shows the phenomena of a short flaming. Grasses are burned to their base but the charred material is only present in some runnels on the surface.

The topsoil and soil surfaces are bare and crumbled with some clay sealing. Charred material is evenly distributed in the upper centimetres mostly by enchytraeids, but apparently also by swelling and shrinking, provoking a kind of “micro-mulching”. The crumbs are loosely fixed by the grass roots. The surface below the shrub shows a mixture partly burned material, grass coal in a fine layer or a thick layer of ash, which will be diluted/ destroyed very rapidly. Runnels of earthworms contain many of the microcharcoals.

A meadow, which was burned half a year ago and was freshly ploughed only show some remnants of the grass coals in some cracks and between the ploughed areas.

These two sites may well give an idea of what was present in the western part of Central Europe half a century ago, before the general interdiction of fire use in the open landscape.

Moreover, they explain the general differences of charcoals from wood and from grasses (see above). The latter are much smaller, sometimes needle-like or fusiform. They also expose the siliceous incrusting of the epidermis and the stomata with their characteristic sickle-like cells. Grasscoal is produced in great quantities, but it is highly volatile and fragile. It also is associated to phytolithes (Neumann al. 2000, Woller et al. 2009), small siliceous particles from grass cells and incrustings (see figure 34). However, in reconstructing former landscapes the term “charcoals” is mostly associated to burned wood. It is obvious that at least one should estimate the percentages of grass- and wood coal for the reconstruction of former fire and landscape dynamics (Feurdean 2012, Marlon et al. 2016).



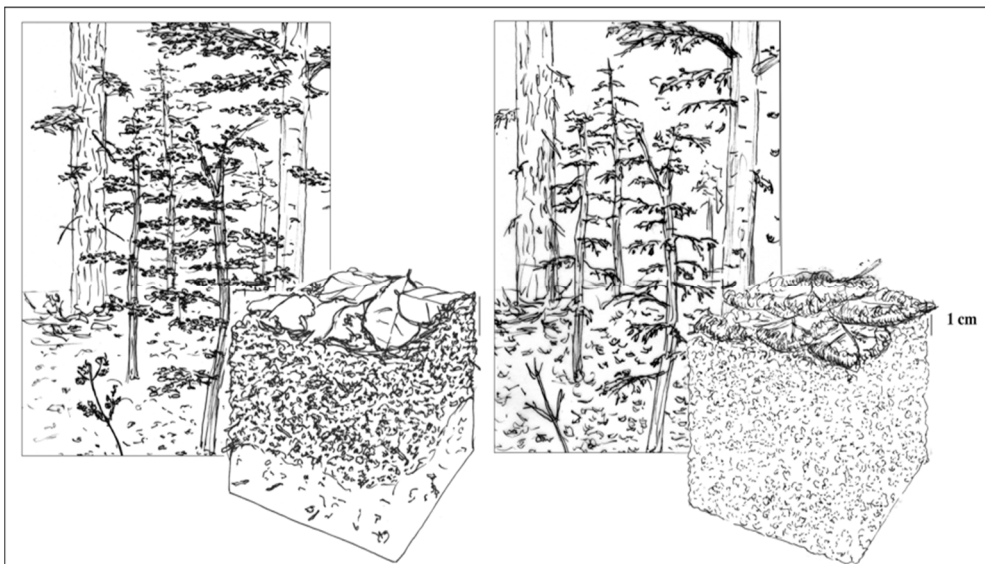
**Fig. 22.** Autumn flaming (2015) of shrub and meadow in front of the *Leghia* escarpment (a). It shows the burned underground of bushes with a thin layer of grass coals and a thick ash layer representing a very fresh fire (b). In the next spring some of the coals flitters are already displaced in the earthworm pipes (c). An almost unburned part of the grasses below the bushes (d) shows very few grass coals. The flamed meadow (e) is characterised by a thick layer of half burned grass stems and coal flitters.

Summarising, the *Leghia* site provides information on the nature of “wild” fire, on the nature of regeneration in a conifer forest leading to moder formation caused by enchytraeids, horn mites and collembols. Moreover, it depicts the general difference between charcoal and grasscoal. Thus, for reconstructions of palaeoenvironments both types of charred material should be considered.

#### **5.4. Risk assessment**

It is quite common sense, that deciduous forests in temperate regions are not inflammable. Moreover, that scheme is a base to interpret charcoals findings, whether in soil or in sediments, as witnesses of human activity. However, during the last 15 years - in August 2003-2006-2009-2012 we had long dry

periods. Summer 2015 stands as the driest since 1761 (KLIWA 2006, Badek et al. 2004, Ehrmann et al. 2009, Becker et al. 2015, Horn 1980). This resulted into a remarkable leaf shed in August and an almost pulverised topsoil. But in August 2015 and 2018 the situation changed completely (see also Meining 2018). Topsoil was pulverised too with no humidity in the upper 10 cm but the trees had a water stress, which was as severe that twigs lost turgor and leaves dried on them. Moreover, they curved up at the margins. After falling down, they formed a fluffy leaf layer in contrast to the other dry periods, where they laid flat on the soil surface in Forchtenberg. Figure 23 demonstrates the ordinary topsoils beneath conifers and deciduous trees. However, after months of drought the topsoil got pulverised and leaved fall in August 2015 and 2018. Contrary to other years, branches and twigs lost their turgor and leaves dried on the trees. They got crumbled and formed a very fluffy OL. Finally, any ignition could cause a rapid ground fire and leak to the twigs and crowns of the conifers nearby. This situation held about one month.



**Fig. 23.** Risk assessment in deciduous forests. The situation in August 2003, 2006, 2009, 2012 (left) with a premature leaf shed lying flat on the soil surface and in 2015, 2018 (right) with a fluffy layer of crumbled dry leaves.

This was observed in several forests in the state of Baden-Württemberg. With the first tiny rainfall and dews formation this risk-situation was over, as leaves became flat on the soil surface again.

As a fire needs fuel, a suitable environment and ignition energy, the risk of a ground fire was present for some weeks. Moreover, as several conifer stands are present in many forests the ground fire could have rushed to them and leak up to become a crown fire too. Thus, we have to abandon the old idea of inflammable deciduous forest especially in a changing climate. And fire management is to be incorporated in the future planning of deciduous forests.

In parallel, the series of droughts accumulated the water stress – not only for the flat routers but also for the isolated old trees or for facade-trees exposed to wind and dry air. This evidenced that the big water cycle was affected by the lack of sufficient recharge of groundwater. So, they got weak and susceptible for insect attacks, as it is visible for conifers. In addition, the growing epidemic of *Hymenoscyphus pseudoalbidus*, a fungus invader from East Asia, will probably damage or kill most of the *ash* trees or their seedlings (Offenburger 2017). This will augment the chances for storm casts in the next years and, thus, islands of new successions (cf. Fischer 1990).

## 6. CONCLUSION

The analysis of the pathways of secondary succession of vegetation and soil after forest fire as well as on slash-and-burn experiment sites yielded a series of results:

- A very rapid regeneration of topsoil / soil surfaces in developing pellicular surface structures ranging from clay sealing to bacterial / algae films stabilising the surfaces. These stages might be regarded as primary and obligatory succession (Gatter 1996), particularly on the long-time burning plots, where temperatures of about 1000°C were reached.

- A subsequent evolution of vegetation and soil in parallel as secondary succession lines alimented either by seed banks or from the surrounding forest.

The impact of soil animals is crucial for the succession lines. Different types of charcoal preservation well illustrate it. Earthworms shape crumb structure and disperse charcoals. Enchytraeids, collembols and mites build a small pellet-structure and maintain an in-situ-weathering with the creation of charcoal horizons near the surface. Ants, however, produce a homogenous soil structure of small pellets but avoid charcoals for their subterranean constructions. As mentioned above there is a strong interdependence of vegetation, soil animals and soil development.

The two forest sites well explain the capacity of fire / fire use in shaping or maintaining a variety of structure from the landscape scale to that of soil micromorphology. This is the opposite of abandonment, which provokes succession lines for permanent shrub or forests.

The sites of open land fire demonstrated the different nature of grass coal being small, fusiform and highly volatile. They also showed the mosaic structure of the burned surfaces, where plants could remain more or less untouched in the middle of burning. This again underlines the structure creating dynamic of fire. Accumulation of grass coal was low with the exception of the flamed wheat field, where flaming apparently is a regular phenomenon.

Finally, all the sites demonstrated the possibility of fire to shape landscapes or parts of them either if the fire is used by man or it is not intended.

However, the general interdiction of fire use in the open landscape and in forests may lead to the accumulation of fuel and to a higher fire risk. Moreover, the loss of experience of a right fire use may also create some risks. Several initiatives for landscape management already showed the usefulness of fire management in a sense of prescribed burning (Schreiber 1981). There is a general conflict in nature conservation whether to follow strictly the present interdiction or to propose and reintroduce a meaningful use of fire, especially in nature conservation. However, it also became clear from the Leghia site that the introduction of monotonous conifer stands will create fire prone landscapes, especially in regions of contrasted climates, not to tell about a future climate change.

On the other side, the observations during the Forchtenberg work evidenced a general risk of fire for deciduous forests in very hot and dry summers, which may increase with a changing climate too.

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## THE ADMINISTRATIVE ORGANISATION OF PRESENT CLUJ COUNTY BETWEEN 1541 AND 1848

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**ABSTRACT.** *The Administrative Organisation of Present Cluj County between 1541 and 1848.* The administrative organisation is one of the most important spatial planning actions, because it directly determines spatial configurations and polarizing relations, while concentrating local government institutions into cities and towns which are becoming more prominent as a result of them being designated as administrative centres. This paper attempts to reconstruct the administrative divisions and the ranking of settlements of present Cluj County between 1541 and 1848. Included almost entirely in the Principality of Transylvania, the area of present Cluj County was mainly covered, from North to South, by the counties of Solnocu Interior (Inner Solnoc), Dăbâca, Cluj and Turda. The Szekler seat of Arieş covered a small part in the South and Bihor County (in the Kingdom of Hungary) covered a very small part in the West of present Cluj County. Their limits remained largely the same over a very long period of time. The counties of Solnocu Interior, Dăbâca, Cluj and Turda extended a lot to the West and East of present Cluj County, but their seats were all located here: Dej (Solnocu Interior County), Bonțida (Dăbâca County), Cluj and Turda, to which one may add Gherla, that had the highest status, just like Cluj, that of free royal city, and had an administration of its own. All counties were divided into two districts, an Upper District and a Lower District, and the districts, in their turn, were further divided into circles (smaller districts). Cluj, Gherla, Turda and Dej have retained their importance throughout several centuries up until today, and their historical heritage and prominence still plays an important part in the present regional framework.

**Keywords:** *Cluj County, administrative organisation, historical counties, districts, Principality of Transylvania.*

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## 1. INTRODUCTION

The territorial administrative organisation in older times has been the subject of history and historical geography and has been often neglected by current regional geographers, spatial planners, and administrative authorities, which are dealing with the realities of the present day, sometimes unaware of the links existing between certain historical administrative divisions and the current challenges in reforming the administrative system and applying a coherent and sustainable development strategy. Historians use to refer to the former realities without taking into account the present, while spatial planners conduct their research and analysis based mostly on current and recent trends. This paper is an attempt to cover such a gap between the two perspectives, putting together historical facts and current administrative and spatial realities. In the context of the new Cluj County Plan (NW Romania), a review of former administrative divisions has been performed. This study refers therefore to the present Cluj County, covering the period between 1541 (the setting up of the Principality of Transylvania) and 1848, when the Revolution triggered a number of changes, including administrative ones, in the entire Austrian Empire. This period of more than 300 years proved to be rather stable in terms of administrative divisions, which were changed only once, by Emperor Joseph II in 1783-1784, only to be changed back in 1790. More important changes occurred in the development of towns and cities, as Cluj and Gherla gained the status of free royal cities, and had their own administration, apart from the counties. Other towns also prospered and developed, especially those related to salt mines – Dej and Turda, which were also county seats, and to a lesser extent, Cojocna and Sic.

## 2. MATERIALS AND METHODS

The paper is based mostly on bibliographical work and an attempt to transfer the information and data resulted from different historical documents (E. Fényes, 1839, E. Fényes, 1847, I.S. Puşcariu, 1864, D. Dányi and Z. Dávid, 1960, A. Răduþiu and L. Gyémánt, 1995, L. Gyémánt *et al*, 2009, L. Gyémánt *et al*, 2016) and specific scientific works (D. Prodan, 1991, T. Nicoarã, 2001, E.Á. Varga, 2002, Susana Andea, 2003, A. Dörner, 2008, I.A. Pop et al., 2008a, I.A. Pop et al., 2008b) into a map showing the administrative divisions at the beginning of the 19<sup>th</sup> century, as well as the main settlements, ranked according to the status they had at the time. Similar work has been conducted concerning other Romanian counties, like Mureş (R. Rusu, 2016), entire regions, like Banat (R. Rusu, 2007), and even administrative divisions in other countries, such as

Glyndŵr District in Wales, UK (R. Rusu, 2011), which amounted to a certain experience and guided the authors in this approach. In this respect, use has been made of many of the historical works and documents which make reference to this challenging historical period, especially those related to the administrative divisions in the present territory of Cluj County. The gathered information has been thoroughly analysed and interpreted in order to provide a synthetic image of the administrative realities during this period, between the 16<sup>th</sup> and the 19<sup>th</sup> centuries, materialized on a map showing the administrative divisions and the main settlements.

### 3. RESULTS AND DISCUSSIONS

#### 3.1. *Historical Context: The Period of the Autonomous Principality of Transylvania (1541-1690)*

After the death of Matthias Corvinus, the Kingdom of Hungary went into a deep domestic crisis. Following the battle of Mohacs (1526), the Turks entered the Pannonian Plain. The fights for the vacant throne of Hungary, between Ioan Zápolya (John Zápolya), the voivode of Transylvania, and Ferdinand I of Habsburg, gave the Turks the opportunity to set up the Pashalik of Buda (1541) in the very heart of Hungary. On the 4<sup>th</sup> of September 1541, the autonomous Principality of Transylvania was set up, under the suzerainty of the High Porte, incorporating the whole studied territory, without the medieval county-based structure being altered. The end of the Ottoman suzerainty over the Principality in 1551, following the abdication of Queen Isabella, who reigned on behalf of her minor son, John Sigismund Zápolya, in order to pass the throne to Ferdinand I of Habsburg, triggered a prompt reaction from sultan Süleyman Kanuni. However, the Austrian imperial troops were chased away from the Principality as late as 1556, when Queen Isabella returned, together with her son, John Sigismund Zápolya (I.A. Pop *et al*, 2008a). Since the latter was the son of the late king John Zápolya, he was referred as “prince” in the chancellery documents for a long time, and therefore, the territory which he administered got the name of “Principality”.

The Treaty of Speyer (1570) confirmed the *status quo*, which meant that the King of Hungary title was passed to the Austrian Emperor, while John Sigismund Zápolya had the prince of Transylvania title for good. The next princes also added titles such as chieftain of the Szeklers and ruler of the parts in the Kingdom of Hungary (*Partium*), i.e. the territories which had not been previously incorporated into the voivodship of Transylvania, and which were assigned, however, to the Principality, because they were not part of the Pashalik of Buda or of Timișoara (I.A. Pop *et al*, 2008a).



The High Porte gave to the categories of people who had a privileged status in the Principality, i.e. the noblemen, the Szeklers and the Saxons, the right to choose their prince freely, provided that he is also confirmed by the Ottoman suzerain power.

The Princely Council was set up in order to lead the Principality of Transylvania, according to a European model. It was an advisory political institution, the role of which was to advise the prince in making important decisions for the country. After some wavering, the number of advisers was set at 12 (A. Dörner, 2008).

The Princely Chancellery was also one of the central institutions. It originated from the former voivodship chancellery. The chancellor was an extremely prominent person in the principality.

Another representative institution was the Assembly of Nations and Orders, that is the assembly of the three privileged “nations” (the noblemen, the Szeklers and the Saxons) and four acknowledged religions (Catholic, Calvinistic Protestant, Lutheran and Unitarian). The country’s Assembly was convened on an annual or bi-annual basis, or whenever it was necessary, and it could last between a few days and several months. In the absence of a fixed residence of the prince, the assembly was held in various towns or even rural localities. In many situations, the Assembly was held in Turda (a favourite town until the 17<sup>th</sup> century), Cluj or even Someșeni (today, part of Cluj-Napoca City).

The three “nations” were not equally represented. The noblemen’s “nation” (which later became the Hungarian nation) was by far the one which played a leading role. It was followed by the Szeklers’ nation, whose military power was bigger than the Saxons’ (Susana Andea, 2003).

The Princely Board was set up in the second half of the 17<sup>th</sup> century as the supreme court of the Principality. It was led by a president, on behalf of the prince (*in nomine principis*). All presidents, with one exception, were also princely advisers.

Counties, Szekler and Saxon seats had their own courts, consisting of the General Judgment Seat (*sedes generalis*), presided by the supreme chieftain in the case of counties and by the royal lord, in the case of seats. One notary and a variable number of assessing jurors were also part of the Seat. However, there were also judgment bodies for minor cases, or first instance courts, referred to as Partial Seats (*sedes partialis*). Finally, commoners could refer their matter to the Rural Seats, led by a rural lord (*judex pagi*), or to the Domain Seat, of the land’s owner (A. Dörner, 2008).

Counties, Szekler and Saxon seats did not change significantly in terms of territory.

Counties were run by the chieftain or the supreme chieftain, appointed by the prince from among the Hungarian prominent nobility, however, subject to a new condition that he had estates on the territory of the county. The chieftain was assisted by two vice-chieftains who were at the helm of the two “circles” or “districts” into which the counties were divided at the beginning of the 17<sup>th</sup> century. Most counties, and therefore the counties located on today’s territory of Cluj County too – Solnoc, Dăbâca, Cluj and Turda – were divided into a district referred to as “Lower” or “Inferior” and another district referred to as “Upper” or “Superior”. The general assembly of the county, presided by the chieftain who was assisted by the notary, the supreme lords, the noblemen’s lords, the two vice-chieftains and several deacons, used to meet periodically, several times per year (Susana Andea, 2003). It had important duties in fiscal, administrative and military matters. The county delegates in the General Assembly of Nations were also appointed during these meetings.

Counties, just like the Szekler or Saxon seats, had some autonomy, which allowed them to create, within the limits of the general regulatory framework of the Principality, their own regulations and bylaws, such as the bylaws of Cluj (1650) and Turda (1664) counties, which brought clarifications regarding the local implementation of laws.

After 1658, when the Turks created the Pashalik of Oradea, part of the Ottoman Empire, things got extremely tense in the western part of today’s Cluj County. Between 1660 and 1680, the Turks claimed that the pashalik should also expand into the upper basin of Crișul Repede, going therefore as far as Huedin and Izvoru Crișului, or even farther, up to Gilău, a situation which escalated to such an extent that armed conflicts took place in 1674 because the Ottoman and the Transylvanian authorities could not reach any agreement regarding boundaries. This was probably caused by the rather unclear situations existing in the past concerning the boundaries between Bihor and Cluj counties, as well as by the Ottoman intention to maintain some ambiguity, which would enable them to incorporate larger territories into the pashalik. Dăbâca and Inner Solnocu counties also lost some of their territories to the Turks (the Pashalik of Oradea), in their western part, located in today’s Sălaj County (I.A. Pop *et al*, 2008a). Things got better after 1683 when the Turks, defeated under the walls of Vienna, withdrew.

The Szekler seats did not change their organization to a large extent either. Since the title of chieftain of the Szeklers was held by the prince, a “substitute” emerged, i.e. the supreme general of the Szeklers, which reveals the Szeklers’ important military role in the principality. Each Szekler seat was originally run by the supreme captain of the seat, which was gradually replaced by the royal lord. The secondary seats were run by a royal vice-lord.

The General Assembly of the Seat played an important part in the Szekler community. It was presided by a royal lord, was convened several times per year and had multiple duties, such as administrative, military, fiscal and judiciary ones. The judicial powers were taken over by the General Judgment Seat.

The Szeklers too were concerned with creating their own regulations and bylaws in order to locally implement the general legislation of the principality. Originally, in the 15<sup>th</sup> and 16<sup>th</sup> centuries, “the Szekler nation’s bylaws” were established, and the bylaws of each seat were added in the 17<sup>th</sup> century, some of which having been drafted for prolonged periods of time (I.A. Pop *et al*, 2008a).

Certain cities, referred to as “free royal cities” (*civitas libera ac regia* or *liberae regiae civitates*) had a special status. Such was the case of Cluj and Gherla – the latter being particularly important after a large number of Armenians were colonized, for which reason it was also known as Armenopolis between the end of the 17<sup>th</sup> century and the beginning of the 19<sup>th</sup> century. The free royal cities had the same rights and freedoms as the counties, without depending at all on the counties. Therefore, cities used to send their representatives to the General Assembly of the country, were entitled to draft their own regulations and bylaws, valid on their territory, and elected their own ruling bodies, which had administrative, fiscal and judicial duties (A. Dörner, 2008). Legal issues were directly referred to the Princely Board. Cities were also entitled to issue documents bearing their own seal.

The right to participate in running the city was solely given to the people who had the capacity as citizens and were registered into the citizens’ registry. The registration was made based on the statements given by two citizens who had to testify that the future citizen’s financial status was adequate. A community of citizens was therefore created, who had certain privileges, but also helped in fulfilling the cities’ obligations (A. Dörner, 2008).

A primary lord or a supreme lord, elected on an annual basis, was at the helm of the city. He was assisted by 12 jurors, also referred to as senators, plus the assembly of the 100 men (*centumviri*), which was headed by a speaker (spokesperson). The town’s primary lord was usually the town’s representative in the General Assembly of the country (Susana Andea, 2003). The town’s magistrate, the lord and the jurors respectively, had administrative, fiscal, military and judicial duties.

An intermediate category consisted of the nobiliary towns (*civitas* or *oppida nobilium*), including Dej (since 1668) and Turda (Turda Nouă since 1616 and Turda Veche since 1668), which were also county seats and were named so because their citizens had freedoms similar to the ones specific to the nobiliary status. Their inhabitants also had several privileges, to an extent almost similar to the inhabitants of the free royal cities. Such towns were under the authority of the county, but could elect their officials freely (A. Dörner, 2008).

A lower category of towns consisted of tax-paying towns (*loca taxalia*) and boroughs (*oppidum*), which had an uncertain urban status, on the borderline between a town and a rural locality. Tax-paying towns (often referred to as boroughs) were named so because they paid an annual tax, however not on the basis of a number of taxation portions, as it was the case in rural settlements. They paid a set amount, directly to the princely treasury (A. Dörner, 2008). Some of these settlements, such as Huedin, were even given the right to send delegates to the country's diet. Other towns, Cojocna or Sic for example, were granted this status due to their salt mines.

### **3.2. Historical Context: The Period of the Habsburg Empire's Rule until the Revolution (1690-1848)**

The Ottoman army's defeat under the walls of Vienna (1683) marked the end of the balance between the two big forces, the Habsburg Empire gaining more power. The Habsburgs launched a general offensive in the former Kingdom of Hungary. The failure of the diplomatic negotiations with Transylvania, vassal to the High Porte, resulted in the imperial armies' entering the Principality (1685). Extremely tough conditions were imposed on the Transylvanian people. Buda was conquered in 1686. The favourable course of the Austrian military operations did not leave to the Transylvanian people much room for negotiation. The principality was occupied again by the imperial troops who hardly faced any resistance at all. It was only in 1690 that the political and military context made it possible for the Principalities' relations with the Holy Roman Empire of the German Nation (commonly referred to as the Habsburg Empire) to be regulated under the *Diploma Leopoldinum*, a document standing as a constitution. After several adjournments decided by the imperial forces, who were waiting for the circumstances to become favourable to them again in order to impose tougher conditions, the *Diploma* was finally approved on 4 December 1691 (I.A. Pop *et al*, 2008a). It was internationally acknowledged through the Treaty of Karlowitz (1699) and re-approved by the Nations, through the Treaty of Satu Mare (1711), which happened following the kuruc uprising.

Under the *Diploma*, Transylvania became a principality, however inside the Habsburg Empire, and was less autonomous than under the Turkish suzerainty. After the death of Michael Apafi (1690), his son, Michael Apafi II, should have succeeded to the princely throne. In fact, the latter has never had any princely powers, and no prince has ever been elected after his death in Vienna (1713). As a matter of fact, as early as 1691, the emperor conducted as a real prince and appointed a substitute for himself, as governor of Transylvania. At last, all the emperors were to take and hold the title of prince of Transylvania, and, starting

with 1765, that of grand prince (in keeping with the new name, the Grand Principality of Transylvania, which replaced the Principality of Transylvania). The imperial power consolidation was performed at the expense of the nobiliary power, which became increasingly useless (I.A. Pop *et al*, 2008b). The Transylvanian noblemen no longer had the authority to elect their prince, and after a while, not even the country's governor, who was also appointed by the authorities in Vienna. The emperor also appointed the supreme commander of the imperial army in the Principality, as well as its treasurer, at all times from among the people faithful to the Court in Vienna. The diet of Transylvania was getting increasingly limited in its functions, started to be convened less frequently and stopped being convened at all between 1762 and 1790 (I.A. Pop *et al*, 2008b).

The governor, later appointed president of the Gubernium (*Regium Gubernium praeses*), administered the principality on behalf of the emperor, being assisted by a Royal Gubernial Council (*Consilium Regium Guberniale*), which consisted of 12 members. All members were entitled, yet not obliged, to attend the Gubernium's meetings along with the governor, in a strictly regulated hierarchy, starting with the supreme general of the troops, followed by the provincial chancellor, the treasurer, the president of the Nations, the president of the Royal Board, the catholic bishop, the Saxons' chieftain, etc. The powers and the duties of the governor and the Gubernium, as supreme institutions of the Principality, covered all the issues unless they fell under the remit of specialized institutions (I.A. Pop *et al*, 2008b).

The headquarters of the governor and the Gubernium were originally established in Alba Iulia, and moved to Sibiu following the kuruc uprising (until 1790), in order to provide a better defence, since the headquarters of the Weapons' Prefecture and of the general commander of the Transylvanian imperial troops were also located there. As a matter of fact, the general commander also had to fulfill the governor's duties on a few occasions.

The Gubernium's headquarters were moved to Cluj from 1717 to 1731, and then in 1790, after the death of Emperor Joseph II (I.A. Pop *et al*, 2008b).

The supreme court in the Principality was the Royal Board (*Tabula Regia Judiciaria*), a successor of the former Princely Board, and played the role of an institution in charge with the cases referred to it by the General Judgment Seats of the counties, the Saxon seat and the free royal towns. It was headed by a president, who was also the lawful president of the Diet, and had the role of a gubernial advisor (I.A. Pop *et al*, 2008b). Three pro-notaries and 12 assessors were also members of this Board. After it repeatedly changed its venue, it established its residence in Mediaş in 1737, and starting with 1754, its permanent headquarters were in Târgu Mureş (with a brief interruption between 1786 and 1790).

The liaison between the central institutions of the Empire and the Transylvanian authorities was provided by the Aulic Chancellery, based in Vienna, which was originally run by a vice-chancellor in order to stress the subordination to the Gubernium and the country's Chancellery. However, in 1742, Empress Maria Theresa changed the name of this institution's head into chancellor, and the chancellor was solely subordinated to the central power, the supremacy towards the provincial chancellor being therefore guaranteed. Under his plans to simplify the State's structures, Joseph II merged the Aulic Chancellery with the Hungary's Chancellery in 1782, however, this reform, like all his other reforms, only lasted until his death in 1790 (I.A. Pop *et al*, 2008b).

The central institutions of the Principality also included the Diet (*Dieta*) which consisted of the delegates of the three privileged nations and the four acknowledged religions, plus the "royalists", who were specifically invited by the emperor. The Diet was led by the president of the Royal Board. Its role became less prominent as the central power was getting increasingly authoritarian (I.A. Pop *et al*, 2008b).

The counties, the Szekler seats and the Saxon seats hardly underwent any change before the Teresian and Josephine reforms. The first territorial change took place as late as 1765 and consisted in the separation of the two districts of Alba county into distinct counties, Alba de Jos (Lower Alba) and Alba de Sus (Upper Alba). A more dramatic change happened in 1783-1784, but only for a short time. By the rescript of 26 November 1783, following the indications given by reformist emperor Joseph II, the system of old counties, Szekler and Saxon seats, was abolished, and the territory was divided into ten counties and nine free cities, without any enclaves and without taking into consideration the "rights" of the three privileged nations. The representatives of the Transylvanian Gubernium objected, but were forced, in the end, to accept this split-up, on condition that one county is added. Thus, the final project, including 11 counties, entered into force under the rescript of 3 June 1784 (I. S. Pușcariu, 1864). The counties were: Alba, Cluj, Făgăraș, Hunedoara, Odorhei, Sibiu, Solnocul de Mijloc (Middle Solnoc), Solnocul Interior (Inner Solnoc), Târnava, Trei Scaune (Three Seats) and Turda. They were grouped together into three districts, Cluj (its counties being Cluj, Solnocu Interior, Solnocu de Mijloc and Turda), Sibiu (with Sibiu, Alba, Târnava and Hunedoara counties) and Făgăraș (with Făgăraș, Odorhei and Trei Scaune counties).

Cluj district was the only one of the aforementioned counties that was located on today's territory of Cluj County and incorporated Cluj, Solnocu Interior, Solnocu de Mijloc and Turda counties. Dăbâca County disappeared for a short time, being incorporated into the two neighbouring counties, Solnocu Interior (in the North) and Cluj (in the South). The Szekler seat of Arieș also ceased to exist temporarily, merging with Turda County.

Such organization by districts and counties only lasted until the edict of restitution of 1790, when the situation preceding the reforms was reinstated, the old counties, the Szekler and the Saxon seats being re-established (I.A. Pop *et al*, 2008b).

Each county was run, as before, by a supreme chieftain who was now appointed by the Gubernium and was the Gubernium's representative in the territory. After 1763, when the Continuous Judgment Board was set up, the supreme chieftain also became the president of this board. He was assisted by a vice-chieftain, elected by the County' Assembly from among the noblemen. The General Assembly of the county, the members of which were noblemen only, used to meet twice a year. In the aftermath of the Teresian and Josephine reforms, the number of vice-chieftains was increased and one deputy vice-chieftain was added. The noblemen's lords, vice-lords and the royal preceptors were subordinated to the vice-chieftains and they altogether formed the jurors or the assessors. A notary, assisted by a vice-notary, who were supported, in their work, by secretaries and scribes, were in charge with the activity of the county (I.A. Pop *et al*, 2008b).

The Szekler seats had a demilitarized organization after the kuruc uprising, and the kuruc too supported this type of organization. It resembled the one of the counties, the only difference being that the person holding the supreme function was called a royal lord, and not a chieftain. He was assisted by several royal vice-lords and royal preceptors, who formed the assessing jurors, as well as by a notary, a vice-notary, secretaries, scribes. Like in the case of the counties, each seat had its General Assembly. Judicially, one general judgment seat, assisted by a secondary one, was in place in every seat until the set-up of the Continuous Judgment Boards (I.A. Pop *et al*, 2008b).

Although the Josephine reforms were largely correct and, in some instances, went well beyond the spirit of the time, anticipating reforms that were to be implemented later, the emperor did not understand the need to negotiate such reforms with the representatives of the privileged nations. In January 1790, on his deathbed, the emperor revoked most of his reforms, including the administrative ones, the previous system being therefore reinstated.

Thus, in the first half of the 19<sup>th</sup> century, the administrative organization of the Principality of Transylvania was mostly similar to the one that was in place in the Middle Ages. Due to the larger number of written sources and documents, this organization can be looked at in a much more accurate way.

### **3.3. Administrative Divisions and the Main Settlements**

During the first half of the 19<sup>th</sup> century, today's territory of Cluj County was mainly part (from North to South) of Solnocu Interior (Inner Solnoc), Dăbâca, Cluj and Turda counties. A small portion in the extreme west was part of Bihor County. Another portion, in the South, was included into the Szekler seat of Arieș.

**Solnocu Interior (Inner Solnocu)** or Belső-Szolnok County, the northernmost county of Transylvania, comprised the northern part of today's Cluj County, also expanding to the west (in today's Sălaj County), north (in today's Maramureş County) and east (in today's Bistrița-Năsăud County). The main urban centres were **Dej**, which also had the town status (*mezőváros*), and **Gherla**, which had a higher status, of free royal city (*szabad király város*). Like most Transylvanian counties, it was divided into an "Upper" district (*Felső kerület*) and a "Lower" district (*Alsó kerület*), which were divided, in their turn, into smaller rural districts or circles (*járás*).



**Fig. 1.** Administrative divisions and the main settlements at the beginning of the 19<sup>th</sup> century. *Source: authors' own creation.*

The **Upper District** of Solnocu Interior County was located in the northern part of this county, north of Someșu Mare and of Someș, up to Țibleș Mountains and Breaza Summit. In today Cluj County, it was represented by two



circles: **Reteag**, which also incorporated today's communes Cuzdrioara and Chiuiești, and **Cățcău**, further West, which comprised the villages located north of Someș belonging to Cășeiu and Cățcău communes.

The **Lower District** of Solnocu Interior County expanded more into today's territory of Cluj County, being represented by four circles: Vad, Dej, Bobâlna and Unguraș. **Vad** circle, which is the smallest on today's territory of Cluj County (it also stretched up to the territory of today's Sălaj County), only incorporated the villages which are now part of **Vad** commune and the Peștera village (which is today part of Dej City). **Dej** circle was broader, it stretched from Cetan and Dej, in the North, to Livada (Iclod commune) in the South, incorporating all the villages on the left (western) bank of Someșul Mic and on certain tributaries, up to Tărpiu, Șigău, Corneni and (part of) Aluniș, therefore comprising Jichișu de Jos (Lower Jichișu) commune, and villages such as Nima, Bunești, Pintic, Orman or Băița. The border between Solnocu Interior and Dăbâca counties seem to have been established here right on Măr valley, which is a left tributary of Someșul Mic. Further West, there was **Bobâlna** circle, centred on the valley catchment of Olpret (today's Bobâlna commune), and also incorporating several villages in the upper basin of Șimișna valley, such as Escu, Ciubanca, Ciubăncuța, Osoi. The border with Dăbâca County was established on the biggest heights of Bobâlna Hill, on the separation line between Olpret and Șimișna valleys, part of Solnocu Interior, in the north, and Lonea (or Luna), Cubleș and Lujerdiu valleys in the south, inside Dăbâca County.

East of Someșul Mic, in the Transylvanian Plain, Solnocu Interior (Inner Solnocu) County had only one circle, **Unguraș**, that incorporated all the settlements located South of Someșul Mare, in today's Mica and Unguraș communes, as well as East of Someșu Mic, in the South, up to the city of Gherla (inclusively), therefore comprising Mintiu Gherlii too. The southern border of the county was on the line that joins Gherla, Fizeșu Gherlii and Ceaba localities, including them. Therefore, the basin of Fizeșu was part of Dăbâca County, except for Fizeșu Gherlii village.

**Dăbâca County** stretched, in its turn, from West to East, and was divided into an "Upper" district and a "Lower" district, the boundary between the two being the valley of Someșul Mic. The county seat was Bonțida. Unlike Solnocu Interior County (where districts are located in the North and in the South, respectively), but similarly to Cluj County, the Upper District in Dăbâca County was located on the western side, more precisely in the Someș Plateau and Cluj and Dej Hills, whereas the Lower District was located on the eastern side, in the Transylvanian Plain. The difference resides in the fact that the Apuseni Mountains were located to the West of Cluj County, which explains the "Upper" district's name, whereas the Cluj and Dej Hills are hardly any higher than the Transylvanian Plain. As a matter of fact, Dăbâca County was the only one in Transylvania that did not encompass any mountain areas.

The **Upper District** of Dăbâca County included, from today's territory of Cluj County, three circles: Panticeu, Iclod and Răscruci. **Panticeu** circle comprised, from today's territory of Cluj County, the upper basin of Lonea (or Luna) valley, upstream of Panticeu, centered on today's communes Panticeu and Recea Cristur. The middle and lower basin of Lonea valley, downstream of Dârja, as well as the valleys which are parallel to Lonea valley to the North, i.e. Lujerdiu and the valley of Măr (the right side only, in the water flow direction), were comprised in **Iclod** circle, the eastern boundary of which is the valley of Someșul Mic. Its territory was much the same as the territory of today's communes Iclod, Dăbâca, Cornești and (partially) Aluniș. Further South, there was **Răscruci** circle, which stretched along the basin of Borșa valley, up to the springs of Borșa, totally or partially incorporating today's communes Așchileu, Vultureni and Borșa, as well as Răscruci village (Bonțida commune), or Sânmărtin and Satu Lung villages (Chinteni commune). Here, the southern border of Dăbâca County coincided with the separation line between the catchment of Borșa valley, in the north, having a flow direction mostly from West to East and being part of this county, and the valleys in the south, such as Valea Mare, Popești, Chintău, Valea Caldă, Feiurdeni, with a flow direction roughly or mostly from North to South, which were part of Cluj County.

**Districtul de Jos (The Lower District)** of Dăbâca County stretched East of Someșul Mic valley, in the Transylvanian Plain. Two circles, Sic and Buza, were located in what is today Cluj County. Most settlements were part of **Sic** circle, which stretched on the right bank of Someșul Mic, from Bonțida, in the South, to Silivaș and Hășdate (which today belong to Gherla City), in the North. It comprised, in its central and eastern part, the settlements located in the middle and lower basin of Fizeș, down to Nicula (inclusively), the only exception being Fizeșu Gherlii village (located in Solnocu Interior County). Sic village was located in the centre of the circle. In the South it expanded to Coasta, Tăușeni, Băgaciu, Sucutard villages, and in the North-East, to Năsal, Diviciorii Mici, Târgușor, Sânmărtin, Sâmboieni and Cutca villages, including today Țaga commune. Further East, there was **Buza** circle, and the only villages included in this circle from today's territory of Cluj County were Buza, Geaca, Feldioara, Copru and Lacu.

South of Dăbâca County, there was **Cluj County** which also largely stretched from West to East, from the Apuseni Mountains to the Eastern Carpathians. Like the other counties, it was divided into an "Upper" district (in the West) and a "Lower" district (in the East), the boundary between the two being almost next to Cluj City, which had the highest possible status at that time, i.e. free royal city (*szabad király város*).

The **Upper District** was located in its western part, which coincided with the mountain area (Bihar-Vlădeasa Mountains, Meseș Mountains, Gilău Mountains and partially Muntele Mare Mountains), and some basin areas (Huedin

Basin, part of Almaş-Agrij Basin), hills or plateaus (Păniceni Plateau, parts of Cluj and Feleacu Hills).

Thus, the westernmost circle was **Bicălatu**, which comprised the villages that are today part of Ciucea, Poieni, Săcuieu communes and partially of Sâncraiu commune (Alunişu and Brăişoru villages), as well as certain localities in today's Sălaj County. **Bihor County** stretched from west of Ciucea and included Negreni and Bucea villages which are part of today's Cluj County. It was not part of the Grand Principality of Transylvania, but was part of the Kingdom of Hungary. Although both of them were part of the Habsburg Empire, they had different administrations and separate sets of laws.

East and South of Bicălatu circle, there was **Huedin** circle, the centre of which was located in the town (*mezőváros*) of the same name. It largely expanded South of Huedin, on the territory of today's (partially) Sâncraiu, Călăţele, Mărgău, Beliş, Mănăstireni, Râşca and (partially) Izvoru Crişului communes. **Almaşu** circle was located a little further to the North, mostly in today's Sălaj County, but also comprised a locality which is now in Cluj County, i.e. Nadăşu (Izvoru Crişului commune). **Gilău** circle largely expanded to the East and South-East of Huedin circle. It comprised almost the entire upper basin of Someşul Mic, incorporating the valleys of Someşul Cald (downstream of Beliş), Someşul Rece and Căpuş, the slopes and the plateaus between them (which are specific in Mărişel or Măguri-Răcăţău communes), as well as other smaller tributaries starting from Păniceni, Mărişel and Măguri in the West, to Cluj-Napoca town (inclusively), in the East. It therefore comprised today's Mărişel, Măguri-Răcăţău, Căpuşu Mare, Gilău, Floreşti communes, Vlaha and Stolna villages in Săvădisla commune, Feleacu village and the greatest part of today's Cluj-Napoca City (excluding Someşeni district, which was a stand-alone village at that time).

Further North, **Baciu** circle comprised the largest part of Nadăş valley catchment, which almost coincided with the territory of today's Aghireşu and Gârbău communes, as well as the largest part of Baciu commune. East and North-East of it, there was **Feiurdeni** circle, which comprised the whole territory of today's Sânpaul commune, as well as the largest part of Chinteni commune and some villages in Baciu commune (Coruşu, Popeşti). Like in the case of Baciu circle, the circle's centre was in the easternmost locality (Feiurdeni); these two circles, Baciu and Feiurdeni, covered parts of Cluj Hills, but did not comprise any mountain areas.

The **Lower District** of Cluj County stretched to the East and South-East of Cluj City and Feleacu Hill, exclusively to the South and East of Someşul Mic valley, inside the Transylvanian Plain, and comprised three circles that are today part of Cluj County, i.e. Cojocna, Mociu and Pălatca. The westernmost circle was **Cojocna**, the centre of which was in the town (*mezőváros*) of the same name. It comprised the villages located East and South-East of Cluj, including

Someșeni (today's district of Cluj-Napoca City), Gheorgheni, Aiton, most of the villages in Apahida commune (Apahida, Sânnicoară, Dezmir, Pata, Corpadea) and in Cojocna commune, up to Iuriu de Câmpie (inclusively). **Mociu** circle was located further East and roughly coincided with the territory of today's Frata, Mociu, Suatu and Cămărașu communes. In the East, it stretched beyond the border of today's Cluj County. **Pălatca** circle was located North of Mociu, it stretched from West, in the valley of Someșul Mic, including the villages which are part of today's Jucu commune, to East, up to Cătina, also comprising, between these borders, villages which are part of Căianu, Pălatca or Mociu communes (Ghirișu Român and Chesău).

Like Cluj County, **Turda County** had an elongated shape from West to East; however, unlike Cluj County, the **Upper District** included the area located in the East, towards the Eastern Carpathians, whereas the Lower District comprised the catchment of Arieș Valley, from West (Apuseni Mountains) to the point where Arieș spills into Mureș.

Consequently, the part of Turda County which is now on the territory of Cluj County was solely located in its **Lower District**. This, in its turn, was divided into several circles including Lupșa, Trascău, Săvădisla, Câmpie and Arieș which are located on today's territory of Cluj County.

**Lupșa** circle comprised the largest part of today's communes Iara (except Buru and Borzești), Valea Ierii and Băișoara (except Săcel), and was centred on Iara Basin and Iara valley. It also covered Arieș valley, upstream of Lungești, on today's territory of Alba County.

**Trascău** circle was located East of Lupșa circle, comprising the villages of Petreștii de Jos (Lower Petrești), Petreștii de Mijloc (Middle Petrești), Petreștii de Sus (Upper Petrești), Săndulești, Borzești and Buru on today's territory of Cluj County, as well as other villages located in today's Alba County.

The most important circle, expansion-wise, was **Săvădisla**. It covered a large area, centred on Hășdate Basin and the western and southern slopes of Feleacu Hill. It comprised the villages of Săvădisla commune (excepting Vlaha and Stolna, located in Cluj County), the entire Ciurila commune, Săcel village (Băișoara commune), several villages in Petreștii de Jos commune, Vâlcele village (Feleacu commune) and all the villages in Tureni commune, stretching, in the South-East, to Copăceni (Săndulești commune), close to Turda.

The **Transylvanian Plain** circle stretched from Turda and comprised two towns (*mezőváros*): Turda and Viișoara. It expanded mostly to the North and to the East of these towns, on the territory of today's Tritenii de Jos and Ceanu Mare communes, and further, into today's Mureș County.

South-East of it, there was **Arieș** circle which comprised today's Câmpia Turzii City, called Ghiriș at that time, which had the status of town (*mezőváros*), as well as the villages which are part of Luna commune. This circle too expanded into today's Mureș County, to the East.

The **Szekler seat of Arieș** was located South of Turda County, at times also having the shape of enclaves inside this county. It was one of the smallest Szekler seats, and the only one somehow isolated from the others which were located in the eastern part of Transylvania. The Szekler seat of Arieș was also divided into two circles (*járás*); it was too small to be divided into districts, however the circles' names complied with the district designation "rule", and therefore there was an "Upper" circle and a "Lower" circle, depending on the villages' localization. The **Upper Circle** of Arieș seat was mostly located on today's territory of Cluj County and comprised Mihai Viteazul, Moldovenești, Cheia, Cornești, Plăiești, Bădeni, Pietroasa and Stejeriș villages, all of them situated West and South-West of Turda town. The **Lower Circle** of Arieș seat only comprised three localities of today's Cluj County, i.e. Călărași, Poiana (today, a district of Turda City) and Podeni.

#### 4. CONCLUSIONS

The analysis shows a remarkable stability of the administrative divisions in the current Cluj County for a long period of time, more than 300 years. In fact, some of the administrative divisions, like counties, were inherited unaltered from the previous period. Therefore, it is noticeable that at least the counties stayed almost unchanged since their setting in the Middle Ages until the 19<sup>th</sup> century with the advent of modernism and the Industrial Revolution. This has also implied that the county seats have acquired and maintained for a long time an administrative function, which enabled them to establish spatial configurations within the counties, triggering polarizing relations, centred on them as seats of local government.

It is therefore not by accident that the most important cities during this period of time, Cluj, Gherla, Dej and Turda, remained the most important cities in Cluj County today. The only former county seat which did not reach urban status is Bonțida, but this was also due to the movement of the county seat to Gherla and then the disappearance of Dăbâca County during the second half of the 19<sup>th</sup> century, when it was merged mainly with the neighbouring Solnoc Interior County, forming Solnoc-Dăbâca County. On the other hand, it is also true that, despite the county seat status, Bonțida was less developed than its counterparts even then.

The administrative function helped the county seats to become market towns, and to acquire further urban functions, which led to their continuous development. Cluj, Gherla, Turda and Dej have retained their importance throughout several centuries up until today, and their historical heritage and

prominence still plays an important part in the present regional framework. The loss of county seat status in the case of Turda and Dej during the 20<sup>th</sup> century had a certain negative impact on these cities, whose attraction areas have shrunk. At the same time, Cluj-Napoca managed to increase its importance and to become a regional metropolis.

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## GENTRIFICATION AND PLACE IDENTITY CHANGE IN GHEORGHENI, CITY OF CLUJ-NAPOCA

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**ABSTRACT.** *Gentrification and Place Identity Change in Gheorgheni, City of Cluj-Napoca.* The scientific study at hand takes a considerable and representative area of the massive socialist housing estates from the City of Cluj-Napoca, Romania, as a case study area and intends to ascertain, through a series of interviews with members of the local community, the phenomenon of gentrification and its impact on neighbourhood identity change in the last quarter century. The results suggest significant changes at microterritorial level in terms of place identity correlated with substantial gentrification phenomena that took place after the collapse of the communist regime in 1989.

**Keywords:** *gentrification, place identity, change, socialist housing estates*

### INTRODUCTION

Gentrification is a generalized phenomenon, gone global, with the global seen as originating in the West (Lees, Slater and Wyly, 2008, Lees et al., 2016). It is also a phenomenon with countless descriptions due to its now extensive geographic spread and to its substantial “life time”. Leaving behind the vision of Ruth Glass, who first coined the term in 1964, as it is rather territorially limited, some view it as the movement of middle class families into urban areas causing land values to increase and having the side effect of chasing away the have-nots (Oxford American Dictionary, 1980). Similarly, it is the “*restoration of deteriorated urban property, especially and working-class neighbourhoods by the middle and upper classes*” (American Heritage Dictionary, 1982), while the 2004 version of the same dictionary names it the restoration and upgrading of deteriorated urban property by middle class and affluent people, which frequently dislodges the lower-income inhabitants of the area.

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However, the old definitions have become obsolete, while new definitions emerged, such as the one proposed by Clark (2005), who sees gentrification as a *“process involving a change in the population of land-users such that the new users are of a high socio-economic status than the previous users, together with an associated change in the built environment through a reinvestment in fixed capital”*. Nevertheless, one must consider that residential rehabilitation, since gentrification is a residential process at its core, is only one aspect of a more profound economic, social, and spatial restructuring. This mutation, where wealthier displace poorer people and diversity is replaced by social and cultural homogeneity, undermines urbanity and the future of cities as emancipatory places.

In a rather interesting connection with Richard Florida’s creative class concept (2003, 2005), gentrification can also be described by the movement of the creatives, such as artists or writers, alongside other middle class members to areas that encompass affordable housing and, at the same time, are located near cultural venues. Buildings change, new shops open catering for newcomers, while the locals find themselves under threat of displacement or are actually forced by rising prices to leave the area or, if lucky, see their neighbourhood lose/change its distinctiveness, its individuality, its identity (Brown-Saracino, 2017).

In some cases (Ghertner, 2015), gentrification has been criticised as an analytic since it has structurally changed too much to still retain its etymological root – *gentry* – and it has sometimes failed by not having the ability to illuminate the changes that take place, for instance, in post-socialist and post-colonial cities where much of the displacement is taking place. In spite of this critique, its power and omnipresence in the scientific literature makes it the go-to phenomenon when it comes to residential changes in urban areas.

Gentrification may have been described for the first time in London and may have shaped cities across United States and Western Europe, but it has strongly influenced “post-communist” states as well (Sykora, 2005). This phenomenon took place in inner-cities areas and was characterised by the rehabilitation of the living spaces and the change in population, with people with lower income being displaced and affluent newcomers moving in their place, being described in cities such as Budapest, Prague, Moscow, Novi Sad or Tallinn (Kok and Kovacs, 1999, Tosics, 2006, Sykora, 1999, Neducin, Caric and Kubet, 2009, Sykora and Bouzarovski, 2012).

There have been however other problematic changes that gentrification may have brought about, for instance a total or partial loss or change of place identity in many neighbourhoods across the globe. A neighbourhood like Notting Hill, London, has been touched by gentrification and its residents have expressed worries about the transformations that took place over the years. However, this phenomenon took a paradoxical turn, as the loss of working-class

landscapes, represented by independent stores, diversity etc., seems to worry the middle classes much more than others (Martin, 2005). In other places, such as Melbourne, Australia, some have experienced that, even without the core feature of gentrification – displacement – present, this phenomenon still takes its toll on the community, and the transformations in retail and meeting places as well as in the local social structure itself can cause a loss of place identity without any physical displacement (Shaw and Hagemans, 2015). Other examples of the undoing of neighbourhoods by gentrification and its ancillary phenomena include the so-called “Little Portugal” in Toronto, Canada, where, after careful evaluations of neighbourhood change and views of the community towards gentrification, researchers have come to the conclusion that the sense of place in this neighbourhood (an immigrant reception area among others) is quickly vanishing (Murdie and Teixeira, 2010).

## **METHODOLOGY**

The main aim of this paper was to examine the phenomenon of the gentrification in a certain part of a well-established urban area and, by applying a set of interviews on some members of the local populace, to determine the impact of said phenomenon, if any, on the identity of the area.

Choosing a case study area proved surprisingly straightforward as we intended from the get go to focus on a manageable area that is at the same time a symbol of the classic socialist urban planning practices. The chosen area is located in Cluj-Napoca, Cluj County, Romania, and has been selected as it is a well-demarcated, relatively homogenous block, delineated by four main thoroughfares, predominantly composed of collective housing (either five story or 10 story high apartment buildings), and currently an expression of the “inner city”, in stark contrast with the newly developed, post-1990, suburbs of the city of Cluj-Napoca. It currently hosts a population of roughly 7000 people and it is part of a larger area, named Gheorgheni neighbourhood, the second largest and one of the most representative in Cluj-Napoca, designed and built between 1964-1970 as part of a larger housing estate (three additional blocks were planned and erected during the same period), later populated with factory workers, teachers, and army personnel (Cluj-Napoca General Urban Plan, 2014). The area is also well-known for its ample green areas and playgrounds as well as for its proximity to services and mass transit nodes and routes. The very few individual houses found in the area are either precursors to the collective housing estates built in the 1960s or later additions, as we shall see in a later chapter. Moreover, buildings hosting other uses than housing include a church, one office space and several central heating installations.



**Fig. 1.** The case study area and its location within Gheorgheni, Cluj-Napoca  
 Source: Google Earth; delineation for Gheorgheni neighbourhood based on data from Cluj-Napoca City Hall



**Fig. 2.** The study area depicting its current collective housing units and their placement

For a period of two weeks, in December 2018, we conducted a total number of 44 interviews in the above mentioned case study area, discussing with the owners or current renters of each individual house as well as with the apartment building managers of each collective housing unit. This later choice was due to the considerable number of residents living in collective housing, which would require substantial resources and extensive periods of time. Out of the total 44, one interview was set up with one of the ministers of the local Orthodox church, the only religious establishment in the study area. The construction of the church began only in 1994 and was finished roughly 15 years later, so despite being a relatively newly-established place of worship, the priest still is a good reference point as he possesses extensive knowledge on the entire community inhabiting and has witnessed many social, economic, and identity changes that took place in the area.

We also based our questions on the “before 1990” and “after 1990” antithesis, with the additional “after 2000” time frame included, as gentrification is considered an expression a restructuring, therefore a facet of the *before 1990* and *after 1990* differences and changes and the shift from communism to capitalism, the market economy and new urban practices.

The general characteristics of gentrification, taken from the series of definitions covered in the introduction, were used to create the queries. The questions comprising the applied interview are as follows (multiple choice or open answers depending on the question). As a side note, the first 12 questions refer to the individual building where the interview was conducted, while the last two refer to the entire case study area. Furthermore, the minister was asked to answer only questions 8 to 14 as we are interested in capturing his view on the area he serves and not the building (church) itself.

1. What type of building is it (its primary function or usage)? a. individual housing; b. collective housing; c. office space, services and ancillary functions;
2. When was the building constructed?
3. Which is the year of the building’s last renovation or rehabilitation?
4. What is the general age of the building’s occupants? a. 20-40 years of age; b. 40-60 years of age; c. over 60 years of age.
5. What is the general education level of the building’s occupants? a. high school; b. bachelor degree; c. postgraduate degree.
6. What is the general income level of the occupants? a. low; b. average; c. high.
7. When did the current occupants move to the building? a. before 1990; b. between 1990-2000; c. after 2000.
8. What is the apartment/land price level? a. low; b. average; c. high.

9. In your opinion, is there social or economic inequality in the building? a. yes; b. no; c. do not know / do not want to answer.

- Was there before 1990? a. yes; b. no; c. do not know / do not want to answer.

10. In your opinion, is there ethnic diversity in the building? a. yes; b. no; c. do not know / do not want to answer.

- Was there before 1990? a. yes; b. no; c. do not know / do not want to answer.

11. In your opinion, are there conflicts between the new and the old occupants? a. yes; b. no; c. do not know / do not want to answer.

12. In your opinion, the population changes after 1990 have been: a. significant; b. insignificant; c. do not know / do not want to answer?

- If frequent and significant changes took place, did it lead to increases in apartment/land prices? a. yes; b. no; c. do not know / do not want to answer.

13. In your opinion, does the area/neighbourhood have its own identity? a. yes; b. no; c. do not know / do not want to answer.

- if yes, what would that identity be?

14. In your opinion, did the already mentioned changes bring about the area's/neighbourhood's identity change in the past quarter century? a. yes; b. no; c. do not know / do not want to answer.

We succeeded in interviewing at least one representative of each house or apartment complex, with the exception of one, 1 Azuga Street, whose manager and residents refused to be questioned.

## RESULTS AND DISCUSSION

The research, including the interviews and the field work, yielded some interesting results, as follows:

- out of the total of 46 buildings that comprise the case study area, the majority, 38 to be exact, are collective housing units, 28 having 5-storeys while the rest tower at 10 storeys; only six buildings are individual houses, followed by one office space and one church house; despite the fact that some apartment buildings host some services such as butcher shops, pharmacies, barber shops or dentist practices, the collective residential function and character of the area are unmistakable; the area was also not altered by massive demolitions or by infilling like other Cluj-Napoca socialist neighbourhoods (Grigorescu, Mănăştur).

- out of the 38 apartment blocks, only one was built after 1990 and the fall of the communist regime, as it was erected in 2011; the remaining 37 were built between 1964 and 1970 as part of the socialist public housing policies that

created four more similar housing estates in the immediate vicinity during the same period; in the case of the individual houses, one was built in 2001, replacing an older, decrepit dwelling, while the remaining five have construction dates unknown, probably in the 1940s or 1950s; the church house was started in 1994 and completed roughly 15 years later, while the office building replaced an earlier house in 2016; it is clear that the area hosts an aging housing infrastructure with very few new additions; this might constitute a problem in the long run as building maintenance is not implemented properly for all structures; examples (photographs) of the types of dwellings mentioned above can be found in Figure 3.



**Fig. 3.** a. individual houses built prior to collective housing (year unknown);  
 b. 10-storey collective housing erected between 1964-1970; c. post-2000 insertion –  
 collective housing unit built in 2001, replacing former house

Source: photos by Bogdan Păcurar

- with the exception of the buildings built after the year 2000, 35 apartment blocks were renovated recently, between 2000 and 2017, while in the case of the older houses, pre-1990, only 5 went through major rehabilitation, the remaining one having its last renovation before 1990; we would like to point out that the major rehabilitations or renovations imply mostly full or partial thermal insulation, new roof insulation or interior painting; smaller repairs do not count; none of the old buildings got their entire plumbing or electrical wiring changed, only minor repairs were conducted for such systems over the years;

- the average age group of the inhabitants of the area proved to be between 40 and 60 years, with 8 interviewees declaring their fellow inhabitants to be over 60 years of age, 11 between 20-40 years of age, while the remaining 24 interviewees stated that the buildings they own or manage are inhabited by people with ages between 40 and 60; this marks a clear departure from the

*“Gheorgheni is a pensioner haven”*, that even some of its inhabitants still proclaim, and proves that the demographics of the area has changed profoundly in the last years;

- in terms of education level, the balance is in favour of higher-educated people, since only 5 interviewees said that the building’s tenants have only secondary education; this means that 38 declared that their cohabitants are highly educated (bachelor studies or higher), implying that the case study area is stronghold for well educated individuals; however, this is not a new event as the area has always been home to highly educated people (this was mentioned by 20 of the people we interviewed, without them being explicitly asked);

- 29 of the people interviewed mentioned a well paid population living in this area, either mentioning high or very high salaries or income; 5 stated that its population has an average income while 9 people said that the inhabitants survive on minimum wage or are impoverished; all people interviewed refused to divulge an estimate of the average income of the people inhabiting the collective or individual dwellings in the case study area, declaring high, medium or low incomes; nevertheless, the case study area proves to be inhabited by many people with lucrative jobs; this was not always the case, since this was mostly a “blue collar” neighbourhood before 1990, according to 35 interviewees, again without them being specifically asked this question;

- according to our interviewed subjects, most current occupants of the residential buildings have been living there since the period between 1990-2000 - 19 people indicated this period when asked about the timeline of the inhabitants; 18 indicated the period prior to 1990 and only 6 the period after 2000; conclusively, the population of the area has been residing here for a relative short amount of time;

- all but two interviewees complained about the high price of land and/or living quarters in the case study area, while the other two indicated an average value; this is consistent with the fact that the area at hand and Gheorgheni neighbourhood as a whole remain some of the most expensive real estate properties in the City of Cluj-Napoca, with an average price of more than 1100 euros/square meter in 2016 (Vascu et al., 2017);

- the presence of inequality in the study area was mentioned by 39 of the interviewees, while 4 did not know or did not wish to answer this question; the same 39 people attested or at least stated with a certain degree of certainty that, prior to 1990 and even between 1990-2000, inequality was considerably less striking;

- surprisingly, 30 interviewees asserted a lack of ethnic diversity in the area, 9 did not know or did not wish to answer, while only 4 people mentioned a distinct ethnic diversity, even now, almost 30 years after the fall of the “less-permeable” border policies of the communist regime;

- however, this phenomenon did not stifle conflicts between the newcomers (1990-2017) and the ones that have been inhabiting the area for more than 30 years; 21 people mentioned some sort of conflict (nature unknown unfortunately) between the two groups, 15 did not know or did not want to answer the question and 7 of the subjects did not report any conflict whatsoever; due to the significant changes in population that have taken place in the area over the years, the risk of conflict increased considerably and may pose a threat to any sort of peaceful habitation;

## CONCLUSIONS

In conclusion, despite being a geographically limited study of the phenomenon that is gentrification, we believe this study has managed to capture what went down socially as well as economically, in the last 25 plus years in a typical socialist collective housing estate such as Gheorgheni, Cluj-Napoca Municipality. According to the answers provided by the interviewees, the status quo of the area changed considerably, while gentrification, with all its characteristics present, contributed to the steady transformations of the place identity of the case study area. Nonetheless, questions still remain unanswered. Specific identities for the case study area and the neighbourhood it belongs to were not defined properly and neither were the gentrification phenomena that swept the area. Thus, we believe that better scientific outcome will surface from geographically expanding the case study area to entire neighbourhoods and interviewing not only a larger group of people, but also more diverse sets of individuals.

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## THE FIVE-MINUTE-WALK DISTANCE CONCEPT, CASE STUDY: CITY OF CLUJ-NAPOCA, ROMANIA

OANA STRINU<sup>1</sup>

**ABSTRACT.** *The Five-Minute-Walk Distance Concept, Case Study: City of Cluj-Napoca, Romania.* This term, also known as the “pedestrian shed”, refers to the distance that would make a person’s option of walking or driving to a destination differ. The distance is visualized as a 400-meter radius area most commonly found in some major cities or capitals’ downtown areas/main areas. To further highlight the characteristics of this concept I applied it on a case study of the city of Cluj-Napoca, checking the adherence of many areas against the concept’s principles. This will display the percentage of studied areas that meet the definition criteria and the results will indicate the proposed collection of measures to be adopted by the local authorities to increase the area definition validity score and to improve the citizens quality of life. This concept could be easily replicated in any city or capital and its metrics could be used to assess citizens.

**Keywords:** *neighborhood, 5-minute walking distance, urban development, city driving, pedestrian shed.*

### INTRODUCTION

Romania witnessed sluggish growth of its cities and its economy alongside other communist countries for an extended period of time. These states and their cities experienced a much different, more rapid development after the fall of the communist regimes, influenced by neighboring countries and particularly by the West.

This paper aims to provide an overview of the growth of large cities according to a concept developed in the 1920s, aimed at developing and attracting investments in multiple key points in a city as well as to supplementing

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the position of the city center, thus making other areas of the city more inviting and desirable for industry, building, governance and daily living.

Today, walkability is becoming a trend in planning as new ideas about urbanism are emerging through the field. Many societies today suffer from rising reliance on vehicles, and road traffic is the main mode of transportation, resulting in development of low density and expanding patterns of growth.

According to Abley (2005, page 3), walkability can be defined as “the extent to which the built environment is friendly to the presence of people living, shopping, visiting, enjoying or spending time in an area”.

## **RESEARCH METHODOLOGY**

This paper is based on a concept developed by planner and sociologist Arthur Clarence Perry in 1920 in New York ([https://www.conservapedia.com/index.php?title=Clarence\\_Perry](https://www.conservapedia.com/index.php?title=Clarence_Perry)).

The goal of Perry’s research was to investigate the scale, spatial arrangement and land use of residential communities and, ultimately, to provide a planning framework for new neighborhoods. He was the first researcher to observe the correlation between distances, heavy traffic and the multitude of people/pedestrians walking more than 5-10 minutes. Thusly, he could appreciate and think of a concept that proved to be revolutionary – The Neighborhood Unit.

### ***What is this concept? How does it work?***

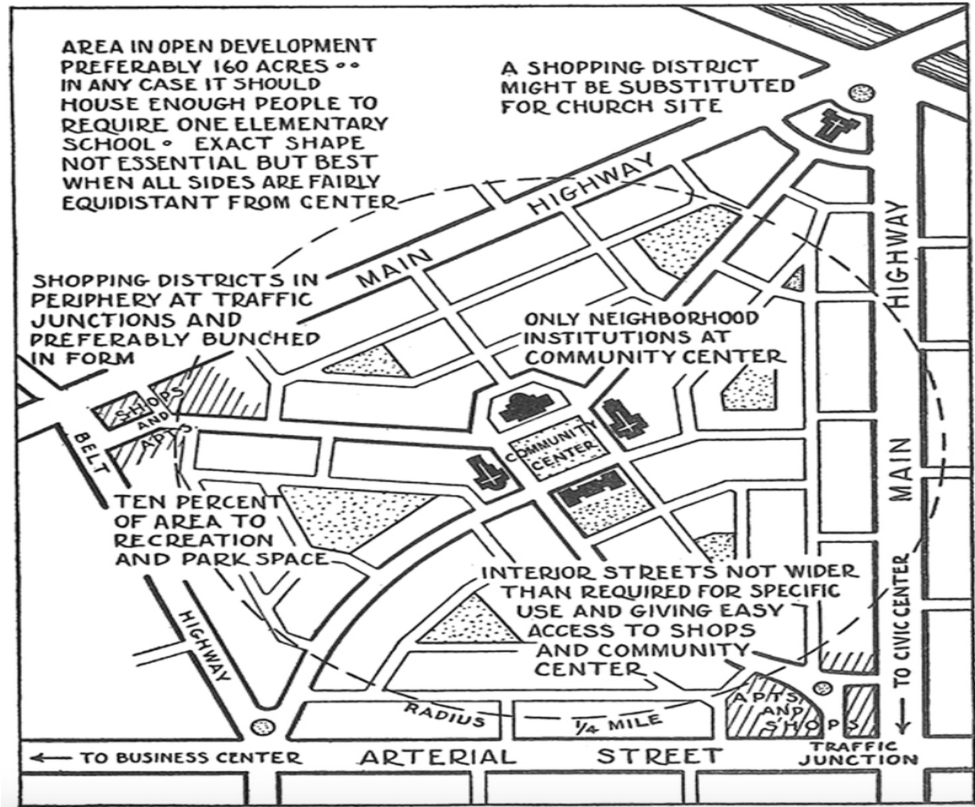
The unit of measurement is typical in the planning profession and is usually defined by a radius of one quarter of a mile (400 metres). A human's average walking speed is about 3 miles / h which translates into 5 minutes to 1/4 of a mile (<https://morphocode.com/the-5-minute-walk/>). Most planners are within walking distance on a proposed plan drawing or an aerial as a circle drawn with the middle of the circle on the destination. Nowadays, the term is called “pedestrian shed” (<https://urbanlands.co/2010/08/23/the-five-minute-walk-more-than-just-a-circle/>).

The pedestrian shed is usually placed around a community center or a common destination such as a school or a public plaza, where social and commercial activity is focused. The “5-minute-walk distance” sets a framework in urban planning to gather both quantitative and qualitative data on a human scale.

Perry put the elementary school in the center of the neighborhood and used it to assess the size and layout of the residential community: the school

had to be within sight of all residents and set a walking distance quarter-of-a-mile threshold in the unit scheme (Figure 1).

Together with local retail shops, public spaces and residential units, the elementary school was one of the four main functions in the neighborhood unit which means around 65 ha in size that provides housing area for a population of 5,000 to 10,000 people (Sharifi, A. 2013, page 52).



**Fig. 1.** Perry's diagram

Source: <https://morphocode.com/the-5-minute-walk/>

In urban planning the general presumption that most people are able to walk for about five minutes before deciding to drive was the topic of debate. A substantial portion of walking behavior research focuses on commuting and transit connectivity. The duration of walking trips also depends on their purpose. Shopping trips and transportation links are shorter while casual walks

tend to be longer. Walking behavior depends on a number of location-specific factors such as proximity to destinations and perceived safety.

It also varies across age groups and socio-economic status. Both the 5 and 10-minute walk thresholds are applied in planning (Yong, Y. And Diez-Roux A.V.,2012, page 2). From these works, we can point to Chi-Chang Wang's study in a district of Vancouver (Wang, 1965), Banargee and Baer (1984)'s study focusing on residential environments and public policy, and the neighborhood concept developed by architect Plater-Zyberk (1991) for Atlanta, Georgia.

In regards to this concept, a number of important articles have been written over time without having a materialized impact within a city, being rather parallel studies on a possible variant of regulating and organizing cities like Chicago, Vancouver or Atlanta. The general inference drawn from Perry's definition is that the idea can be implemented in various ways, depending on the planner's vision and the main point to be made – the social or the physical.

## **CASE STUDY – CITY OF CLUJ-NAPOCA, ROMANIA**

Most researchers agree that the quarter-of-a-mile (400 m) radius defining the walkable circle area is a fair distance from which to assess access to public facilities and therefore to calculate how walkable a neighborhood is.

I applied the concept of "5 minutes' walk distance" in the City of Cluj-Napoca, focusing on three study areas:

- Bulgaria neighborhood
- Gheorgheni neighborhood
- Downtown

I chose a list of three particular neighbourhoods, the key points being reflected by the facilities and services that are available in that area, from the necessity of providing a clearly specified study that can view the definition in a more accessible way and that makes the definition easy to understand.

The location of the neighborhoods represents three different categories: the downtown is the central area of the city, where the most numerous and diversified types of services and facilities are located, the Gheorgheni neighborhood, which displays medium characteristics, and the Bulgaria neighborhood, which is the last positioned in terms of services and endowments. With this perfect difference between all these three neighborhoods, I figured the contrast between them would better explain the idea Perry had created.

I used the Google Earth service and its role of calculating pedestrian distances to measure the distances from the selected main point (where most of the

services and facilities in that neighbourhood were concentrated) and destination (the final service / place). I have used the tool [www.traveltimeplatform.com](http://www.traveltimeplatform.com) to validate the data given by Google Earth, which, like the service provided by Google, facilitates the measurement of the pedestrian distances from a specified point on a map to a selected destination in a predefined area.

In the analysis, I considered a set of 14 elements to be absolutely necessary to be present in the immediate vicinity of a residential area in order to be chosen as a "typical area", that is, to fit into the "5-minute walk distance" definition. I chose as a landmark the central point of the area, where most of the services needed for the population are located. These 14 elements were chosen according to the everyday or weekly needs of a citizen: medical services, financial services (banks, insurance, etc.), public transportation station, university, schools, kindergarten, commercial services (shopping & retail), park, entertainment services (theatre, cinema), car parking (including underground parking), spare time and meeting points/socializing (restaurants, bar, pedestrian area, coffee shops), beauty services (barber shop, nail salon, hair salon), accommodation services (hotel/guest house), and religious activity (churches).

All the areas being compared are equivalent for the neighborhood they represent. This case study is aimed at gathering on how the definition of neighborhood used in urban areas affects walkability within community areas.

a) Bulgaria Neighborhood



**Fig. 2.** A street in the Bulgaria Neighborhood  
*Source: Google Street View*

At the origin of the name was a small community of Bulgarian farmers, who arrived in Cluj-Napoca in the ninth century. Although this community numbered only a few dozen families, the name of the area in which they settled has survived even today. Local historians say that the Bulgarians settled in Cluj-Napoca’s eastern region, fled the Ottomans, and were also strong gardeners. Over time, the identity of the area’s Bulgarian ethnic community vanished and created a neighborhood with largely industrial characteristics but experiencing residential changes, today housing about 28,000 inhabitants.

Most of the services found in this neighborhood are mostly concentrated in the same place. Although the neighborhood does not easily find several common services such as kindergartens, shops, financial institutions, the area is constantly developing and expanding, with the daily approval of residential and commercial projects and buildings.

**Table 1.** Results of the case study on the Bulgaria neighborhood

	Distance (in minutes)	Distance on foot (in km or m)
Medical services	6 min	500 m
Financial services, banks	15 min	1.2 km
Public transport station	2 min	120 m
University	19 min	1.5 km
Schools	6 min	450 m
Kindergarten	9 min	750 m
Shopping center	15 min	1.3 km
Park	6 min	500 m
Entertainment (cinema, theatre, opera)	20 min	1.7 km
Car parking	- *	- *
Free time/ Socializing (restaurant, bar, coffee shop)	5 min	400 m
Beauty services (barber shop, hair salon, nails salon)	1 min	90 m
Accommodation services Hotel/Guest house	4 min	350 m
Church	9 min	750 m

*Source: Own compilation*

*\*in the area there is no paid parking and monitored by the local administration; cars can be parked in any available space along the street*

In the table, results shown in red are beyond the 5-minute distance. The results show that most of the elements in the Bulgaria neighborhood are located at a distance of more than 5 minutes on foot. The inhabitants of this

neighborhood have to use a car or public transport instead of walking in order to perform their daily tasks like going to shopping, taking the kids to school or to the playground, using medical services, paying bills, etc.

b) Gheorgheni Neighborhood



**Fig. 3.** Gheorgheni Neighborhood

*Source: Own photo*

Neighborhood Gheorgheni is the greenest neighborhood and the one that has undergone the least changes. The neighborhood name comes from the very easy to reach village of Gheorgheni. The area also includes Gheorgheni Lake, which is also named "Bottomless Lake".

The first document dating the existence of the lake is from 1370, and belonged to the king of Hungary, Louis of Anjou. Later, the lake was transformed into a fishery but over time, the lake became one of the most beautiful places of leisure in the city and the most beautiful in the neighborhood. Today, the Gheorgheni neighborhood is green, airy and highly sought-after residential area for home purchase, housing the largest shopping center in Cluj-Napoca, near the lake.

Here, the residents can enjoy various facilities, being relatively within short distances, such as public transit stations, parks, etc. Around 47,000 people currently live in this area.



**Table 2.** Results of the case study on the Gheorgheni neighborhood

	Distance (in minutes)	Distance on foot (in km or m)
Medical services	1 min	96 m
Financial services, banks	3 min	220 m
Public transport station	2 min	180 m
University	10 min	850 m
Schools	4 min	350 m
Kindergarten	5 min	350 m
Shopping center	3 min	220 m
Park	2 min	200 m
Entertainment (cinema, theatre, opera)	12 min	1.0 km
Car parking	11 min	850 m
Free time/ Socializing (restaurant, bar, coffee Shop)	6 min	500 m
Beauty services (barber shop, hair salon, nails salon)	3 min	210 m
Accommodation services Hotel/Guest house	7 min	550 m
Church	1 min	69 m

*Source: Own compilation*

Unlike the neighborhood of Bulgaria, the people who live in the neighborhood of Gheorgheni had to select the car instead of walking for only a few services. They will walk for things such as getting kids to school, shopping, paying bills, and so on, since all of these facilities are within a maximum 5-minute walk distance.

c) Downtown – City Centre



**Fig. 4.** City Centre  
*Source: Own photo*

The key central area of Cluj-Napoca is the administrative, financial, commercial and not in the least the cultural centre of the city. It is arranged in 3 wide squares forming a triangle: Unirii Square, Mihai Viteazul Square and Avram Iancu Square (where both the Romanian Opera and the Orthodox Cathedral are situated).

Preserving a set of monumental and historical architectural buildings dating from the XVII-XX centuries, the center is individualized as opposed to the rest of the city. Cluj-Napoca’s zero point is Unirii Square, which is the “medieval core of the city”, clustered around Saint Michael’s Catholic Cathedral and Matei Corvin’s Statue.

The walls of the medieval fortress delimit the former historical fortress of the city that once had only 45 ha. Unirii Square is the largest square (220 m x 160 m) in the countries of Eastern and South-Eastern Europe.

After 1980, the square was called Unirii Square, a name that is still preserved today. Colloquially, it is also called the Great Square or simply the Centre. Unirii Square also houses other famous buildings such as: on the side is the Bánffy Palace, which now houses the Art Museum and the two buildings built in the mirror, from which Iuliu Maniu Street begins.

The former City Hall and the National Bank are situated to the south. The Continental Hotel Building, built in 1894, is located at the southwest corner. The Central region, in a smaller measure, also plays a residential function in addition to the geographical, architectural, cultural, administrative, financial and commercial position it successfully fulfills.

**Table 3.** Results of the case study on City Centre

	Distance (in minutes)	Distance on foot (in km or m)
Medical services	2 min	190 m
Financial services, banks	1 min	34 m
Public transport station	2 min	150 m
University	4 min	270 m
Schools	5 min	400 m
Kindergarten	7 min	550 m
Shopping center	5 min	350 m
Park	4 min	350 m
Entertainment (cinema, theatre, opera)	8 min	650 m
Car parking	1 min	84 m
Free time/ Socializing (restaurant, bar, coffee shop)	1 min	64 m
Beauty services (barber shop, hair salon, nails salon)	3 min	220 m
Accommodation services Hotel/Guest house	3 min	210 m
Church	1 min	40 m

*Source: Own compilation*

Most of the buildings in which this residential function is found are in the buildings with the minimum height of the ground floor and one floor/attic, where on the ground floor there is an ongoing commercial activity/services and upstairs are in most cases, the homes of the business owners.

It is very convenient for a buyer to opt for a home in the central area, even small, since almost all form of facilities, schools, walks, shopping, hospitals are in the central area, so it is no longer necessary to drive to other areas in the city, excluding the airport that is located at the city exit. Currently the central region is home to around 38,000 residents.

In contrast with the other two neighborhoods, the Downtown area provides a full range of services and the longest distance that a citizen has to walk is about 650 m, which means 8 minutes. In the Downtown area, the citizen may find all required services and facilities. There are enough parking spaces in the central part of the city, whether they are clustered in the form of a car park (multi-level) or along the streets, and they may be used for a fee. Residents of the entire city may take advantage of a position or a maximum of two parking spaces in the vicinity of the building, in the form of a monthly fee payable to the local government.

Also, depending on the area where the person lives or where the parking place is located, there are different fees about the proximity to the central area - the closer the parking place is to the central area, the higher the fee. Fortunately, no building project is approved by the local administration that does not benefit from an underground car park containing at least one parking space per apartment and including parking spaces for visitors. As a result, the parking spaces in the central area are used predominantly by visitors/people working in that area for a certain period.

## CONCLUSIONS

After analyzing the three areas – the Bulgaria neighborhood, Gheorgheni neighborhood and Downtown – we can draw the following conclusions:

- the services in the central area are diverse, diversified and it is easy for people to travel by public transport from any point in the city to the city centre facilities / facility goals. They can easily complete their duties, since these services are at a reasonable distance of 5 minutes from each other, so they can return home using public transport again. They can also use their own car that may be left in a parking space in the central area and then use it again to return home. This is only required if they do not live in the central area; residents of downtown can access goods and services on foot.

- there are also various services in the Gheorgheni neighborhood, though less extensive than in the central part of the city. Basic services operate and the people can handle most of their regular or weekly tasks without having to use their car because the services are located at a maximum distance of 5 minutes from home.
- in terms of services, the Bulgaria neighborhood ranks the worst, lacking services and facilities, which forces residents to walk distances of more than one kilometer or even drive their car or use public transport in order to solve their daily tasks.

This study will suggest that urban community design is still lacking in the City of Cluj-Napoca to encourage people to walk. In addition, many community services are not provided at key locations in urban residential areas. In planning a neighborhood, the sustainability concept can be applied to enhance the walkability of residents in the urban community.

A further conclusion is that the Perry walking distance standard (400 m) is very suitable to be used in a city like Cluj-Napoca.

### ***Solution***

Investors who want to build a corporation, kindergarten, or a shopping center in those areas, where they are lacking and are completely required should be given tax incentives by the local authorities.

By embracing the idea of “5-minute-walking-distance”, the local public government and the architects and urban planners responsible for horizontal development might create future urbanization plans that will allow people to walk to the necessary services/facilities, drive their cars less, and if they need to walk more than 5 to 10 minutes, choose public transport.

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## MAIN CHARACTERISTICS OF INCOMING TRAVEL PACKAGES IN ROMANIA. STUDY CASE: TOURS INCLUDING CLUJ-NAPOCA

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**ABSTRACT. Main Characteristics of Incoming Travel Packages in Romania. Study Case: Tours Including Cluj-Napoca.** The main purpose of this study is analyzing the features of tourist packages (tours) created and marketed by tour operators to foreign tourists visiting one of the main cities in Romania, Cluj-Napoca. The secondary objectives are identifying the characteristics of the travel packages, the features of tourists' stay in Cluj-Napoca and the presence of this travel destination in tourist products.

Thus, the focused territory is the city of Cluj-Napoca. Nevertheless, we analyzed the whole tourist package, in order to place the stay in this travel destination in the general context.

An analysis grid was designed, choosing the proper variables. Data was collected by content analysis of the description of tourist packages existing on the websites of the incoming travel agencies in Romania. 394 tours of at least 2 overnights, 8 tours with one overnight and 45 one day trips could be found and analysed.

Information was found regarding aspects such as: length of stay, access and chosen means of transportation, accommodation type and meals included, the extent to which tour guiding services are included and other services, facilities and activities provided. Collected data was processed, graphs were created and analysis and interpretation of results was performed.

We opted to use Microsoft Excel to create the table of the analysis grid where data regarding the chosen variable was introduced and the graphs were created in the same program.

For tours with at least 2 overnights, there are tours including 7 overnights in Romania and only one night or without overnight in Cluj-Napoca, plane to arrive in Romania and road access to Cluj-Napoca, preference for hotels, half-board for meals, tour guiding services for the whole circuit and few activities, facilities and other services included. Also, there are few one-day trips or trips with one overnight and they provide especially transportation, accommodation, meals and tour-guiding, being provided few and poor diversity of other activities, services or facilities.

**Keywords:** *incoming tourism, tourist packages characteristics, travel destination, Romania, Cluj-Napoca.*

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## INTRODUCTION

We are in the age of travel (Postelnicu & Dabija, 2016), noticing the growth of international tourism, a sector of the economy registering growth in both international tourism (5% in general and in Europe) and earnings (4% in general and in Europe) in the year 2018 (UNWTO, 2019). Nowadays, tourism does not represent only recreation and leisure, but also culture, education, peace and cooperation at an international level (Postelnicu & Dabija, 2016).

During the next years, international travel will become more frequent and easier to be realized due to three trends: an expanding global middle class, an aging global population and, last but not least, improved technology and infrastructure (World Economic Forum, 2017).

In this context, inbound tourism is a popular topic for research. Inbound or incoming tourism represents the activities realized by a person in another country than the one where he/she resides (UNWTO - Understanding Tourism: Basic Glossary)

Romania is a travel destination for incoming tourism, being located in one of the four "vacation lakes" created after 1990 mentioned by UNWTO. Also, this country can be a travel destination due to its various potential suitable for both sunlust and wonderlust tourists. It has as principal features: the diversity of the natural or anthropogenic potential and the tourist arrangement of the heritage (Păcurar, 2018). Also, 8 categories of attractions are on the UNESCO World Heritage List: the Danube Delta, the ancient and primeval beech forests of the Carpathians, 8 painted churches in Moldavia, the monastery of Horezu, the Dacian fortresses of the Orăștie Mountains, 8 wooden churches in Maramureș region, 7 villages with fortified churches in Transylvania, the historical center of Sighișoara (<https://whc.unesco.org/en/statesparties/ro>). There are good air connections (also by low-cost flights) and the country is a popular destination to be discovered (both in terms of physical tourist objectives and habits).

The tourism from this country went through almost all the phases and trends that existed in the European tourism, excepting the years 1945-1990 when it developed in the conditions of the centralized (not market) economy (Ciangă & Pătrașcu, 2010). Also, in the present, the number of incoming tourists is growing steadily. In Romania the growth percentage of incoming tourism is lower than the one at global or Europe's level, being, nevertheless, positive. The international tourist arrivals amount to 2797 thousands of tourists in 2018 (in comparison with 2760 thousands in 2017) and, if in 2017 the international tourism receipts were of 2527 million dollars, in 2018 they were of 2896 million dollars (UNWTO, 2019).

According to Romania's Statistics National Institute, in 2018, the main sources of incoming tourists in Romania were the neighboring countries: Republic of Moldavia -2330 thousands of tourists, Bulgaria – 1600 thousands, Hungary – 1491 thousands, and Ukraine – 1466 thousands (<http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table>, 2019).

Regarding the provenance of foreign tourists, there can be said that the majority are from Europe (92.37 % from total) and out of the tourists with residence on this continent, more than half (53.29%) are from the European Union. Concerning tourists from other continents, the situation is the following: Asia - 531 thousands of tourists, North America - 260 thousands, Africa – 39 thousands, Central and South America – 37 thousands, Australia and Oceania 26 thousands (<http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table>, 2019).

The international travel circulation should be encouraged by the importers of tourism (the stakeholders) which address to those who represent the tourism exporters (Cristureanu, 1992; Păcurar, 2018). Among the stakeholders in tourism, there are the travel agencies which are creating and marketing travel packages. Even if nowadays there is a trend that tourists organize themselves their travels, an important part of them still use travel agencies, especially if it is about an international travel. It brings advantages such as more security, professionalism and commodity.

Because the number of incoming tourists is growing both in Romania in general and in Cluj-Napoca in particular and a part of these tourists arrive in Cluj-Napoca by purchasing travel packages from travel agencies, the main purpose of this study is analyzing the features of tourist packages (tours) created and marketed by tour operators to foreign tourists visiting one of the main cities in Romania, Cluj-Napoca. Also, the research has the following secondary objectives: analyzing the presence of Cluj-Napoca travel destination in the tourist products, identifying the characteristics of the travel packages, identifying the characteristics of the arrival and stay in Cluj-Napoca.

Travel packages represent a combination of at least 2 services from various categories such as: transportation, accommodation, food, recreation (Gherasim & Gherasim, 1999), medical, business, congresses, etc. They satisfy the needs and desires of travelers during the period between leaving the residence and their return to the destination where the travel started (Stănciulescu & State, 2013). The basic services are considered the ones related to transportation, accommodation and food (Nicoară, 2010). Nevertheless, in order to be competitive, it is necessary for travel packages to include also other types of services.

Travel packages imply visiting one or more travel destinations, so this concept will also be approached. A travel destination is an administrative-territorial unit having one or more travel attractions, whether natural or anthropogenic (Neacșu et al, 2011)



In the following lines, the chosen methodology, the results, the answers to the research questions and the analysis of data will be presented.

## **MATERIALS AND METHODS**

This research started with the formulation of the research topic which was identifying and analyzing the characteristics of incoming travel packages that include also Cluj-Napoca. This would lead, later on, to identify and analyze features of incoming tourism.

The main objective was formulated: to analyze the features of tourist packages (tours) created and marketed by tour operators to foreign tourists visiting one of the main cities in Romania, Cluj-Napoca.

Also, the study had the 3 secondary objectives mentioned below:

1. analyzing the presence of Cluj-Napoca travel destination in the tourist products;
2. identifying the characteristics of the travel packages;
3. identifying the characteristics of the arrival and stay in Cluj-Napoca.

The fulfillment of the secondary objectives would lead to achieving the main objective and, after choosing the objectives, research questions were formulated.

To analyze the presence of Cluj-Napoca travel destination in the tourist products, the research questions were:

- How many travel agencies have tours including Cluj-Napoca?
- How many tours including Cluj-Napoca are per travel agency?

Next, to identify the characteristics of the travel packages there were the following:

- Which is the tourists' travel availability taking into account the duration of tours?
- Which are the tourists preferences regarding travel services, facilities or activities?

Last but not least, in order to obtain information regarding the features of tourists' arrival and stay in Cluj-Napoca we had the following questions:

- How do tourists arrive in Cluj-Napoca?
- What services and/or activities do they have included in Cluj-Napoca?

The following step in our research was choosing the research method used in order to answer the research questions and to accomplish the main and secondary objectives.

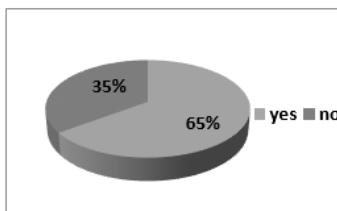
As a research method, we have chosen the content analysis of the description of travel packages existing on the web sites of the incoming travel agencies in Romania. The proper variables have been chosen.

An analysis grid was designed in Microsoft Excel. A table was created which contained the variables in the first line above the columns, and information about a tour was written in every line of the table.

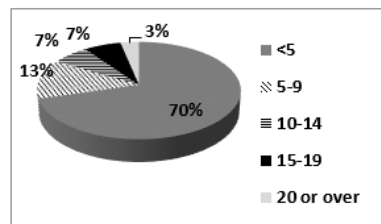
Data was collected by content analysis of the description of tourist packages existing on the websites of the incoming travel agencies in Romania in the months of April and May 2019. The collected data was processed, graphs were created in Microsoft Excel and the analysis and interpretation of the results was performed.

## RESULTS AND DISCUSSIONS

Regarding incoming travel agencies, it was found that 94 incoming travel agencies, having their headquarters in Romania, had incoming travel packages on their websites. From these agencies, 61 had tours (one day tours or tours with one or more overnights) in Cluj-Napoca as travel destination, representing only about 2/3 of the agencies analyzed. We identified 394 tours with at least 2 overnights, 8 tours with one overnight and 45 one day trips. All these 61 agencies had tours with at least 2 overnights, but, in the most of cases, an agency had less than 5 tours with at least 2 overnights. The majority of agencies had their headquarters in Bucharest (59.01%), being followed by the ones located in Cluj-Napoca (19.67%), and there are 1-2 agencies also in other cities.



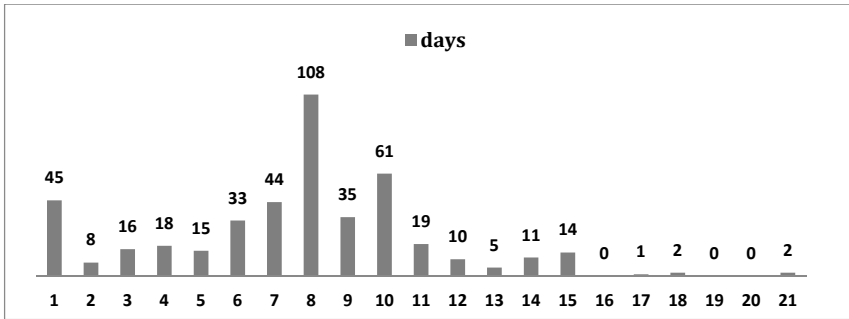
**Fig. 1.** Incoming travel agencies creating tours with at least 2 overnights



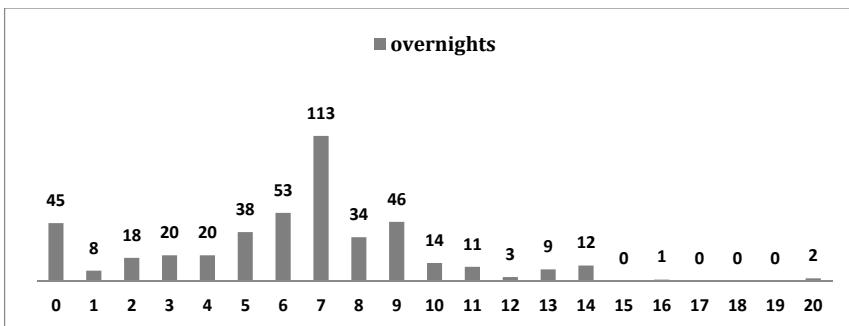
**Fig. 2.** Number of tours with at least 2 overnights/agency

Only 4 agencies had tours with one overnight, being 1,2 or 3 packages/ agency. Also, 9 agencies created and promoted one day trips on their websites, but there were both situations with few and many trips, from agencies with under 5 one day trips to ones offering 8 or more packages of this type. Thus, it can be mentioned that this travel destination is insufficiently exploited by being included in travel packages.

Regarding the duration, the length in days of the tourist package, and the number of overnights spent both in Romania and in Cluj-Napoca were analysed. It resulted that the majority of tours had 8 days and 7 overnights in Romania. An explanation could be the fact that it is easier to organize tours only in Romania and 8 days is a proper duration to visit various travel destinations in the country and to have an idea about the features of the chosen travel destination (local specificities, traditions, lifestyle).

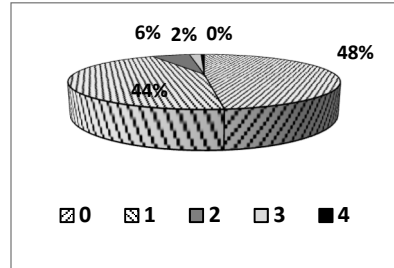


**Fig. 3.** The duration of the tours in days



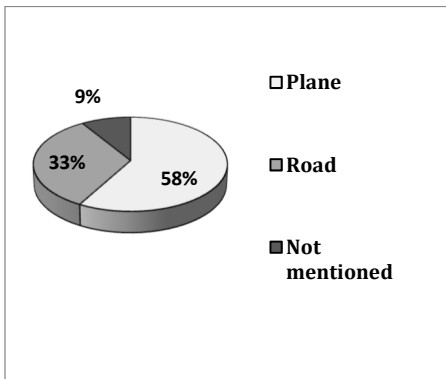
**Fig. 4.** The number of overnights in Romania in the tour

Analyzing the tours with at least 2 overnights, because the ones with one overnight started in Cluj-Napoca and had an overnight somewhere else, it can be noticed that, in the majority of situations, tourists did not stay overnight in this city or spent here only one night. This aspect may have various explanations: tourists preferred tours with one overnight in a certain city/village to visit more places in the same tour, the insufficient development of the tourism potential in the nearby area of Cluj-Napoca (except for Turda Salt Mine), the bigger prices in Cluj-Napoca compared to other cities/villages in Transylvania, the geographical position, far from Bucharest (the location of the airport where tourists from the biggest number of tours are landing), far from the UNESCO World Heritage places in Transylvania and the lack of connection with Dracula story. Nevertheless, from the obtained data, it resulted that tourists have time availability of taking part in travels.

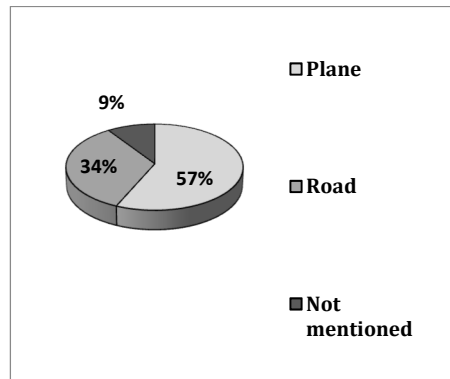


**Fig. 5.** Number of overnights in Cluj-Napoca

Regarding the means of transportation chosen to arrive in Romania, we found information regarding only the tours with at least 2 overnights. So, as one can see, for the majority of these 394 travel packages, the plane was preferred to arrive in Romania and the road means of transportation to arrive in Cluj-Napoca.



**Fig. 6.** The means of transportation used to arrive in Romania

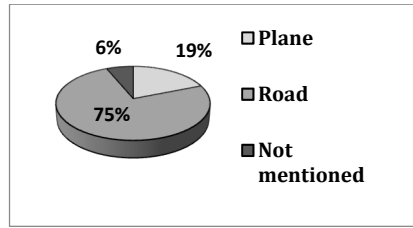


**Fig. 7.** The means of transportation used to leave Romania

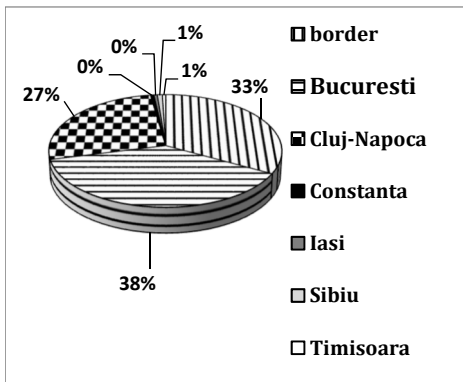
Possible explanations for the preference to arrive in Romania by plane could be: the comfort it provides (shorter time to arrive at the destination, less tiring than road means of transportation, the existence of many direct flights or flights with good connection) or the prices lower than in the past.

Nevertheless, in most cases, tourists arrived in Cluj-Napoca by road means of transportation. This situation shows the preference for the airport in Bucharest to arrive in Romania by plane and is explained also by the fact that a significant number of tourists still arrive in Romania by road.

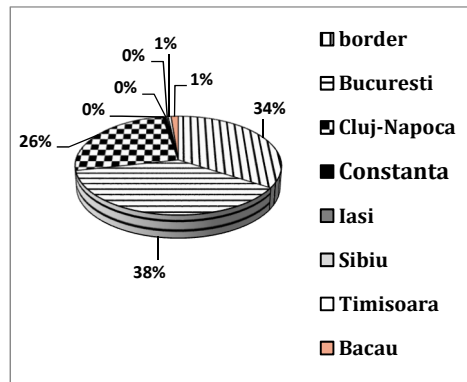
Regarding the first destination in Romania, the majority of routes started in Bucharest, as the capital of the country and having also the airport with the biggest number of routes, followed by those starting at the border. Cluj-Napoca was on the third place as the starting point of a tour. For leaving Romania, the order was the same.



**Fig. 8.** The means of transportation used to arrive in Cluj-Napoca

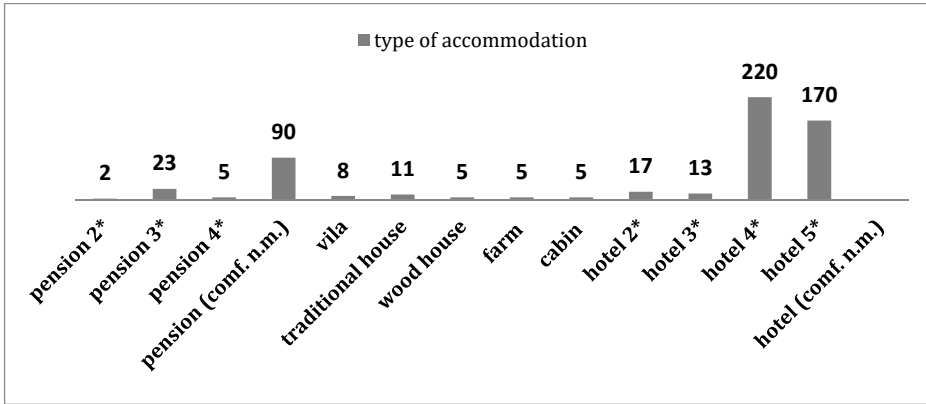


**Fig. 9.** The place where the route starts in Romania



**Fig. 10.** The place where the route finishes in Romania

After approaching access and transportation, the accommodation services were analysed.

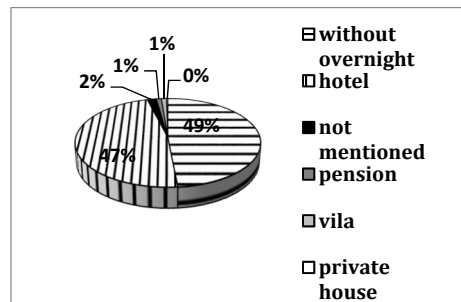


**Fig. 11.** The types of accommodation units used during the stay in Romania in tours with at least one overnight

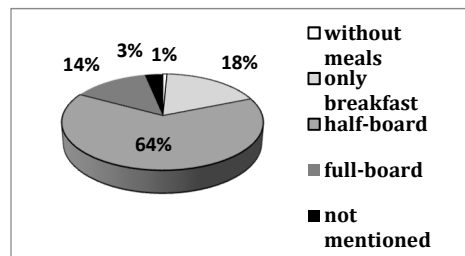
For tours of at least 2 overnights, hotels were preferred both in general and in Cluj-Napoca, and for the travels with one overnight, people opted for pensions.

Furthermore, we searched for information about the meals included in the tourist packages and it resulted that, in tours with 2 or more overnights, half-board was most frequently chosen. Also, for travels with one overnight, breakfast and dinner were provided and tourists received lunch in the one-day trips.

The preference for half-board may be due to the fact that it is comfortable to have breakfast in the accommodation unit, one meal (usually lunch) may be taken with the group to socialize, to taste traditional food and to avoid wasting time searching for a place



**Fig. 12.** The types of accommodation units used during the stay in Cluj-Napoca

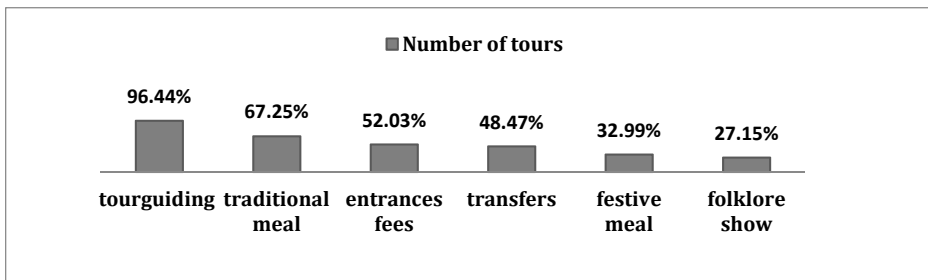


**Fig. 13.** The meals included in the tourist packages with at least 2 overnights

where to eat and one meal may be taken on their own to feel that they do not have all day planned, they have free time and liberty of organizing it as they prefer.

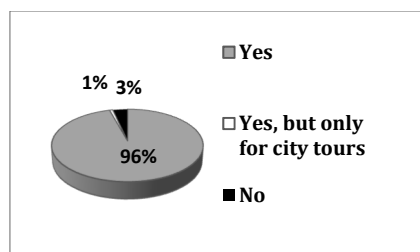
Related to other types of services, activities and facilities included, first we analysed the 394 tours with at least 2 overnights. These tours started in various locations and, at a certain point, tourists arrived also in Cluj-Napoca.

Analyzing the other services, activities and facilities, it resulted that the most popular were the ones included in the graphic: tour-guiding, traditional meals, entrance fees at tourist attractions, transfer between the airport and the accommodation unit, festive meal and folklore show, only the first 3 ones being present in more than half of the tours with at least 2 overnights.



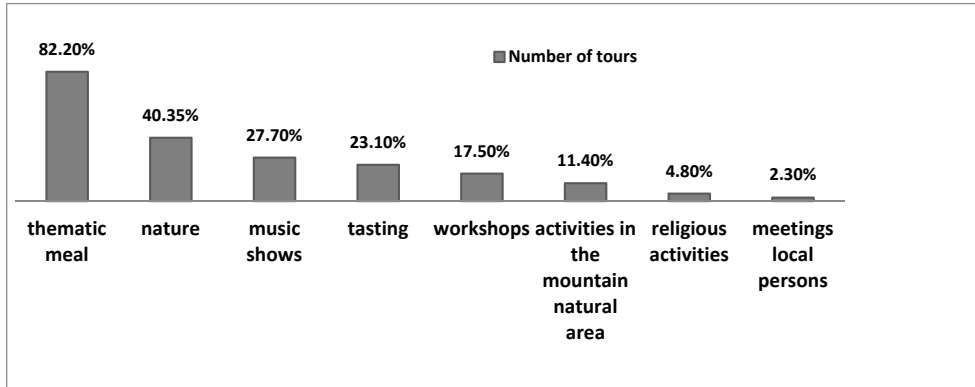
**Fig. 14.** Other services, activities or facilities included in more than ¼ tours with at least 2 overnights

It resulted that the majority of tourist packages included tour guiding services during the whole circuit. There is, nevertheless, a small percentage of situations where this service was used only for city tours. Tour guiding services were included also for travels with one overnight or one day trips.



**Fig. 15.** The existence of tour guiding services in tours

Also, for this type of tours, we grouped the activities/services/facilities into categories to see how various categories were present in the travel packages offered to foreign tourists. The results can be seen in the following graphic.



**Fig. 16.** Categories of activities included in tours with at least one overnight

Concerning meals, more than  $\frac{3}{4}$  of tours had thematic meals, the most popular being the traditional meals, included in 72% of tours with at least 2 overnights. The other types of thematic meals were present, each one, in less than 5% of the tours: festive meal, festive Dracula dinner, monastic meal, Easter meal, Christmas meal.

There were various activities related to nature, in 40.35% of the total number of these tours. Nevertheless, none of them was included in more than  $\frac{1}{4}$  of the tours. The most frequent ones were boat trips in the Danube Delta – 11.92% or hiking – 11.16%. Other such activities were traditional carriage ride, heritage train ride, picnic, bicycle ride, horse riding, cave visit, boat ride on the lake or the Danube, climbing by cable car, campfire, guitar songs, horse-driven sled riding, zipline or kayak. The large number of activities mentioned shows the wide range of activities possible to be performed in nature and whose suitability in being included in travel packages is checked, as they had already existed in some tours created and marketed to incoming tourists.

A bit more than  $\frac{1}{4}$  of these travel packages included music shows. From the total number of tours with at least 2 overnights, 27.15% had included folklore shows. The other types of shows were included, each one, in less than 2% of the travel packages: symphonic music shows, opera shows, Christmas Carols shows, religious music events, or philharmonic orchestra performance.

Also, almost  $\frac{1}{4}$  of these tours included tasting activities (23.10%). There were both food and drinks tastings. Nevertheless, the poor diversity must be mentioned, as there was only wine, palinka/tuica (Romanian brandy), beer, cheese and fruit jam tasting. One notices that wine tasting was quite popular, being present in almost 20% of tours with at least 2 overnights (19.28%). Each one of the other types of tasting were included in less than 5% of these tours.



The workshops were another type of activities presented (in 17.50% of these tours). The workshops were related to traditional crafts, traditional eating products or drinks. The most popular type of workshop was the ceramic one (13.19%), the other ones representing less than 4% each: egg painting, carpet, wood crafts, embroidery, fruit jam, Romanian alphorn (tulnic), gastronomic, beer making, blacksmith workshops. Even if each type of workshop was included in a very small number of tours, the workshops' diversity of types and the fact that they appeared in tours shows the interest of tourists in taking part in experiential tourism and the potential of diversifying the travel packages by including workshops.

We found also some activities realized in the natural mountain areas (11.40%). The most popular activity from this category was hiking, in 11.16 % of the tours, followed by activities present in a small number of travel packages: kayak, climbing by cable car, zipline and cave visit, campfire and guitar songs.

Moreover, there were activities related to the religious area (4.8%). They consisted of attending religious ceremonies (either Orthodox, Catholic or Protestant) or meeting with personalities from the religious domain. Also, approaching meetings with local persons, there were 2.3% of tours with at least 2 overnights including this type of activity: meeting with religious living personalities – 1.26% of tours and visiting a Romani family - 1.01% of packages.

Also, in terms of facilities/services related more to logistics and comfort, it can be mentioned that some travel packages included things such as: entrances to tourist attractions, airport-accommodation unit transfers, luggage services, 24/24 hours assistance, rented car, motorcycle, bicycle, plane ticket, travel insurance, travel guide book. Among these, only entrance fees at tourist attractions and airport-accommodation unit transfers were included in about half of these tours (52.03% and 48.47%), the other ones being much under ¼ of travel packages.

Next, we analyzed the other services, activities and facilities in travels with one overnight and one day trips.

In the 8 travels with one overnight, the entrance fees at tourist attractions were included, and in 7 out of 8 tours, tour guiding services were included. There were few activities and a poor array of them: in 4 tours workshops were organized (of wood products, blacksmith or egg-painting), 3 of them included traditional meals, tastings of traditional food or drinks were not organized and in 3 tours activities in nature (hiking, bear-watching and heritage train ride) were organized.

Regarding the 45 one day trips, it was noticed that tour guiding services were included in all tours and entrance fees at tourist attractions were included in 30 tours. Also, here the variety of activities included was poor, as there were

traditional meals in 12 tours, activities in nature (hiking, bicycle ride, boat ride on the lake or heritage train ride) in 9 travel packages, hiking activities in 5 tours and, unfortunately, no workshops.

So, other services, activities and facilities were included also in tours (one day tours or tours with one or more overnights), apart from the basic services, but their number and diversity was still poor.

The destinations visited during the tours were analyzed also for the one-day travel packages or those with one overnight.

Concerning the 45 one day tours, it resulted the existence of a large number of travel destinations, nevertheless, few of them were included in more than 1-2 tours. Also, unfortunately, only few packages included destinations in Cluj county and only Turda Salt Mine was present in 12 packages, Turda Gorges in 5, while the other destinations in this county (Negreni, Mărișel, Mănăstireni, Nadășu, Tarnița Lake or Beliș-Fântânele) being, each one, present in a single tour. Except for Satu Mare and Bistrița-Năsăud counties, the analyzed one day tours included destinations in the neighbouring counties (Alba County – 10 destinations, Sălaj County – 9 destinations, Maramureș County – 7 destinations, Bihor County – 3 destinations, Mureș County – 1 destination). Also, the most popular destinations for one day trips starting in Cluj-Napoca were: Turda Salt Mine (12 tours), Alba Iulia (10 tours), Rimetea (9 tours), Sighișoara (6 tours), Turda Gorges (5 tours), and Sibiu (5 tours).

A similar situation resulted regarding trips with one overnight starting and finishing in Cluj-Napoca: a wide variety of destinations, most of them included in only 1-2 tours, in the following counties: Maramureș - 8 destinations, Suceava – 5, Cluj – 3, Alba – 3, Sibiu – 3, Mureș – 2, Bihor – 2, Harghita – 2, Hunedoara – 1). Again, the number of destinations in Cluj County was very small – only 3 destinations (Turda Salt Mine, Huedin and Izvorul Crișului). Last but not least, regarding the overnights, they were in other counties than Cluj and each overnight destination was presented in only one tour (Rimetea, Sibiu, Săcel, Breb, Căpățânenii Pământeni, Corund, Gura Humorului, Sucevița).

Thus, from the analysis of both one-day trips and trips with one overnight, it resulted that there is the low capitalization of the tourism potential of Cluj County.

## CONCLUSIONS

In conclusion, the main and the secondary purposes of this research were fulfilled.

It can be mentioned that this travel destination was included in less than 2/3 of the incoming travel agencies analysed and, in the most of cases, an agency had less than 5 tours with at least 2 overnights. Also, there were few one-day trips or trips with one overnight that included Cluj-Napoca. So, this travel destination is insufficiently exploited in travel packages.

Regarding the features of tours, access and services provided in Cluj-Napoca, in most situations the travel packages lasted 8 days. Out of 7 overnights in Romania, there was only one night spent in Cluj-Napoca or none. Also, the plane was chosen to arrive in Romania while other means of transportation on the road were preferred to arrive in Cluj-Napoca, the first and last point of the route in Romania was either Bucharest, the border or Cluj-Napoca. For accommodation, the hotel was chosen both for the overnights in Romania in general and in Cluj-Napoca, the packages including half-board. The tour-guiding services were included for the whole tour. Activities (and facilities) were included also, but their number and diversity were still poor.

Analyzing the results of this study, in our opinion, an ideal tour with at least 2 overnights, created and marketed to foreign tourists, could include what will be mentioned in the following lines. First of all, the package would comprise the basic services: transportation during the tour, accommodation and half-board (breakfast in the accommodation unit to be more comfortable, lunch with the group to have traditional food prepared, to socialize with other travelers and to save time, dinner being taken by tourists on their own to feel they have free time, not all day planned). In the tour there should be tour-guiding services (for explanation and problems solving) and, for comfort, entrance fees to tourist attractions and airport – accommodation transfers would be included. Moreover, in order to increase the quality of tourists' experience in Romania and their level of satisfaction, it would be recommended to include at least one activity from the following categories: thematic meal (e.g. traditional meal or thematic meal related to the event that would take place then/soon – Easter, Christmas), activities in nature (eg. hiking, or maybe a traditional carriage ride or heritage train ride for persons without a good physical condition), a music show (e.g. folklore show), a tasting activity (food and drinks), a workshop – to be involved in creating something typical for the place they visit (eg. ceramic products) and to get in touch with the religious or secular customs, they could attend a religious ceremony and visit a family belonging to one of the many nationalities living in this country.

Regarding one day trips and trips with one overnight, starting from Cluj-Napoca, it can be mentioned that they were few: 45 one day trips and 8 trips with one overnight. Regarding the basic services, transportation and lunch were included in the one-day tours and transportation, accommodation in hotel or pension and half-board (breakfast and dinner) existed in the tours with one

overnight. In both types of tours tour guiding services and entrance fees to tourist attractions were included but, unfortunately, there were few other services, facilities and activities and, also, few destinations in Cluj County.

Thus, for these tours it would be recommended to create and market more one day trips or tours with one overnight to extend the duration of stay in Cluj-Napoca, if possible, including destinations in Cluj County to raise the awareness of the tourist potential of the area near the city of Cluj-Napoca or, at least, to include more services, facilities and activities.

In the following years, other studies may be conducted on this topic in order to analyze the evolution of the features of travel packages addressed to foreign tourists which include also the city of Cluj-Napoca on their route.

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## **PARTICULARITIES OF THE CULTURAL TOURISM IN ZALĂU IN THE CONTEXT OF THE EUROPEAN HERITAGE: THE ROMAN FESTIVAL ZALĂU POROLISSUM**

**CĂLIN CORNEL POP<sup>1</sup>**

**ABSTRACT. Particularities of the Cultural Tourism in Zalău in the Context of the European Heritage: the Roman Festival Zalău Porolissum.** Covering an area of 3,850 square kms, the county of Sălaj lies in the north-western part of Romania, as a passage between the Western and Eastern Carpathians. The main settlement of Sălaj is the city of Zalău, lying at the heart of the county, along Zalău valley, near the Northern Meseş Mountains. Evidence of the Dacian culture and civilization can be found all over the county. The stronghold was well known in antiquity as Dacidava, a central place for the gatherings of Dacian tribes living in the region, known today as Sălaj. Here 14 treasures of Dacian silver coins and jewels were found, which may explain the fact that Sălaj was one of the towns that laid on the ancient road of salt whereon salt used to be traded from Transylvania to Central Europe. Another important Dacian settlement would be Moigrad (Porolissum), on the heights of Măgura Moigradului, mentioned by Ptolemeu in his "Geographia". After the Roman conquest and the colonization of Dacia as a Roman province, Roman experts in military strategy transformed the Meseş Mountains into the north-eastern border of the Roman Empire. This "limes" separated the territories of the Roman province Dacia from the unoccupied area which belonged to the free Dacians. The military structure of Porolissum, the capital of the province "Dacia Porolissensis", acquired the rank of "municipium", by an order of the Emperor Septimius Severus. Ruins of the Porolissum town, together with Roman fortifications near the passage Poarta Meseşului stretch to an area of about 200 hectares. In Porolissum, archaeological discoveries brought to light two large stone-built Roman "castrum", one amphitheatre, several temples, civilian constructions and Roman roads. Within the study there were both open-response questionnaires, when the subject was free to answer as he saw fit, and closed-response questionnaires, in which the subject had several possible answers from which he could choose the response considered convenient. The Roman Festival Zalău Porolissum recovers a part of the shared historical past within a geographical space where the European community now functions.

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Through impeccable organization and administration, this part made possible the development of the greatest empire in ancient times. Through The Roman Festival Zalău Porolissum, the Zalău City Hall proposes to its inhabitants and tourists a vast event with an educative-cultural dimension. We believe that this sort of manifestation may counteract the promotion tendencies of the underground culture. We wish for The Roman Festival Zalău Porolissum to pleasantly provide to the public history moments, traditions, culture and specific costumes. The Roman Festival Zalău Porolissum is an event of our identity that reconfirms our values and space in Europe. At the European Union's construction a few fundamental facts contributed: shared geography and history, the Greek culture, the Christianity and the Roman legacy. The Roman culture and civilization are marks of the European identity, which define the present European citizen's consciousness.

**Keywords:** *The Roman Festival Zalău Porolissum, Cultural tourism, Global values, European Heritage.*

## INTRODUCTION

Tourism is a phenomenon of our time, based on the increased need to restore the health and the change of the living environment, the birth and development of a sense of openness to the beauties of nature (Guyer-Freuler, 1905). Tourism shall be entered among the most complex and characteristic phenomena of the contemporary world, gaining mass development especially in Europe and North America. The contemporary dynamism of the tourism activity makes this phenomenon to be included increasingly more and more in the field of scientific research, as geography itself aims at sightseeing of the territory (Popovici and Mihail, 1980). Heritage tourism comprises both the touristic resources and the tourism structures made for their valorization through tourism activities (O.G. no. 58, 1998). Natural heritage tourism is made of both natural components, understood as the main shareholder at the stock exchange of the tourism potential (Cazes, 1992) and anthropogenic components. It is increasingly emphasized that tourism has contributed to the expansion and integration of areas and countries into the European Union, being a catalyst for modernization, economic development and prosperity of the *third world* states (Williams, 1998). By mid-century, tourism was considered an economic domain because of its contribution to the development of the society (Cosmescu, 1998). Geography and tourism are two terms predestined to be joined, as any geographer should also be endowed with the tourist qualities (Chabot, 1964).

Tourism geography is a branch of the economic geography studying tourism as a social phenomenon, within the interdependent relationships between the geographical environment and society in terms of genesis, distribution and consumption of tourism product, the tourism consequences on landscape within defined territorial units (Swizewski and Oancea, 1977). The present stage of evolution of the human society is characterized by an unprecedented development of tourism, materialized in the inclusion of new regions in its range of valorization. Therefore, not without reason, some researchers consider tourism as the most dynamic world industry of the 21<sup>st</sup> century (Cocean, 2010). Tourism is a phenomenon which is expanding continuously, triggered by the necessity of knowledge, rest, physical and mental recover of humans and their income. As a human activity, tourism is inconceivable without the anthropogenic factor addressing population of different ages, professions and social conditions. All natural conditions, social, economic and historic context, where Romania has developed in time, have constituted the premises with different degrees of favorability in the development of the tourist phenomenon. Thus it is noticed the gradual entry in the interest area of the most constituent parts of the natural and man-made factors, of great diversity, with strong custom ways to exploit tourism. For example, in the Zalău municipality (Figure 1), the organization of the Roman Festival Zalău Porolissum is a step towards reaffirming its belonging to the European space and its values, through putting into value the Romans' heritage, one of the basic features of the European Community.



**Fig. 1.** The Roman Gate. The opening ceremony of the Roman Festival Zalău Porolissum ([www.zileleromane.ro/foto.html](http://www.zileleromane.ro/foto.html))



The fact that the Roman Days Festival has a chance to be included in an international circuit of theme festivals (Austria-Hungary-Romania) motivates the organizers who thus are encouraged to perpetuate this important event, while the success of the festival had proved the opening of the public towards events offering cultural approach to entertainment.

## **HISTORICAL TESTIMONIES OF THE ROMAN FESTIVAL ZALĂU POROLISSUM**

Located in north-western Romania, at the passage of the Eastern Carpathians and Apuseni Mountains, Sălaj County has been known since ancient times as the Sylvania County, namely Forests County. It has an area of 3,850 km<sup>2</sup> and to the north side its neighbors are the districts Satu Mare and Maramureș, to west and south-west Bihor, and Cluj to the south-east. Zalău Municipality, which is located in the center of the county on the valley with the same name, is the administrative capital of Sălaj and represents its cultural core too. Zalău city is situated nearby the borders of the former Roman Empire, precisely 8 km far from the Roman camp in Porolissum, the most powerful protection entrenchment in the north-western Roman Dacia Province. In history, the first consignment of Zalău as an inhabited settlement is assigned to Anonymus, notary of the king Bela the IV<sup>th</sup> of Hungary in his work paper "Gesta Hungarorum". But the first document with a certain date of Zalău dates from 1220 in the Register of Seats in Oradea as "vila Ziloc". In time, the name of the settlement changed from "Ziloc" in 1220, "Zilah" in 1282, "Opidum Zylah" in 1443, "Zila" in 1601, to "Zilahu" and "Zalahu" in XIX<sup>th</sup> century or the forms in German "Waltemberg" and "Zillennmarkt". It is recognized as town only in 1473 through a privilege of Matei Corvin. In modern history, Zalău was known as a provincial town with mostly rural features, the local history being almost insignificant. Zalău Municipality, besides its economic importance, it is a strong cultural, educational center and last but not least an attractive tourist area. On the territory of Zalău Municipality historical evidence since Neolithic has been emphasized. Dacian coins discovered in archaeological areas from central part of the municipality, from Mișii Valley and from the west side of the city, added to the important elements belonging to Roman culture, demonstrates the continuity of Dacian inhabitation in this region and the development of some economic relationships with Porolissum town. After the conquest of Dacia, the frontier of Roman Empire was established on the top of the Meseș Mountains, being made of border fortresses, cannons, vellum, ditches and other forms of protection. Porolissum complex (Figure 2), as an archaeological reservation, covers almost 200 hectares.



**Fig. 2.** The Praetorian Gate of the Porolissum archaeological complex ([www.festivalulroman.ro/foto/festival-anul-2007](http://www.festivalulroman.ro/foto/festival-anul-2007))

Nowadays, through several systematic archaeological studies, ongoing continuously since 1977 and through restoration-conservation projects which contributed to the scientific capitalization, the site became one of the most important archaeological objectives in Romania. Porolissum can be taken as a true “key stone” of protection in Dacia province thanks to its military-strategic role, and thus representing the most important strategic site of Roman domination in the north-west of the new province, milestone of the defensive system in this part of the Roman Empire. Developed mainly for the protection of the Roman marks, Porolissum has developed into a flourishing border town, with a great economic and commercial potential and a powerful center of Roman spirituality. In time, Porolissum, besides its military-strategic importance, became an important trade center in the region as well as a cultural point of radiation of Roman civilization.

## **FESTIVAL PRESENTATION AND METHODOLOGY**

This festival took place for the first time in 2005 triggered by the desire of offering the public a high-profile event, with cultural-educational features, which can be individualized among the main events of Romania. The first edition of the “Roman Festival Zalău Porolissum” was organized in the same time with Zalău Celebration Day, between the 29<sup>th</sup> and the 31<sup>st</sup> of July 2005. The major success of the first edition of the festival stimulated the City Hall to organize this celebration twice a year. As a consequence, in 2006, Zalău Municipality hosted two different events, “Roman Festival Zalău Porolissum”

on the 30<sup>th</sup> of June and Zalău Celebration Day on the 1<sup>st</sup> and 2<sup>nd</sup> of July. Since its first edition, "Roman Festival Zalău Porolissum" had an international character given by the participation of some artists from the European Union. As a consequence of the success at its first edition, the number of participants, Romanians and foreigners, has boosted to the next editions. The second edition of "Roman Festival Zalău Porolissum" has brought to life parts of the culture, civilization and traditions of the Roman Empire, life and military organization, reproducing battles, occupations and professions of the Empire, theatre, music and dance. The third edition of the festival took place in Zalău on 30<sup>th</sup> June and 1<sup>st</sup> July and at Porolissum-Moigrad on 2<sup>nd</sup> July. The Roman camp at Porolissum was included as a location for the artistic programs of the festival to give tourists the opportunity to discover the ruins of the Roman town of Porolissum. In these three editions, not only in Zalău, but also in Porolissum, the glory of the Roman Empire was brought to life for three days. The former Empire, a territory of culture and civilization which harmonized the European continent, has built up the basis for the construction of what we today call the European Union. In the edition of 2005, the first day of the festival included a musical show for children, a comedy show, a movie projection of *Gladiator*, and also a music concert. The location where it took place was 1<sup>st</sup> December 1918 Square and the stage was arranged in front of the Cultural House. The second day of the festival began with the "opening" of the Roman fortress: interactive exhibits masters of pottery, quarries, blacksmiths, beekeepers, Roman cuisine, followed by an exhibition of the painting "Story of Wine", a folklore concert, a military parade of the Legio XV<sup>th</sup> Apollinaris (Figure 3), on the route Grand Hall - Mihai Viteazul Boulevard - Roman fortress, Greek-Roman fighting demonstrations, a Roman wedding and again a military parade on the route Cinema Scala - Mihai Viteazul Boulevard - Union street - Transylvania Building - Mihai Viteazul Boulevard - Roman fortress.

The program of the last day of the festival which took place at Porolissum-Moigrad, after receiving the official mission and visiting the camp, included: a Roman fighting demonstration, an initiation in handling the battle weapons, fashion parade and Roman dances, lunch of the mission in Roman fortress, soldiers parade, the visit and presentation of the Roman fortress for the public, the big fight demonstration and other different artistic and folkloric moments. As concerning the number of participants, it was estimated that there were approximately 5,000 people at Moigrad and between 10,000-15,000 people at Zalău. The "Roman Festival Zalău Porolissum" attracted various tourists, especially from Transylvania, through promotion on all media channels (television, newspapers, radio, posters) - especially in Transylvania.



**Fig. 3.** Legio XV<sup>th</sup> Apollinaris  
([www.festivalulroman/foto/festival-anul-2012](http://www.festivalulroman/foto/festival-anul-2012))

The “Roman Festival Zalău Porolissum” website promoted the event even in other countries attracting tourists from Hungary, Italy, Germany, England, U.S.A. and Norway so that the festival has all the chances to be included in the circuit of theme festivals in Europe. The “Roman Festival Zalău Porolissum” 2006 program included, since its first day, a clothing design contest “History and costumes”, in which students had to make a representative costume of the ancient Romans and Dacians, traditional costumes, followed by a theatre moment, a public ancient debate, a duel as in the Mediaș Knights Regiment, Gipsy dance, folk music, a magic show, medieval concert, costumes parade, Celtic music, and fire juggling. In another location took place the military camp opening, fights demonstration – XV Apollinaris Legion, gladiator fights – Gladiatoria Pannonica Family, the presentation of the fight formation – XV Apollinaris Legion, fights on horses, gladiator fights, tournament, duels – Mediaș Knights Regiment and finally the camp closing. In the municipal park there have been many contests, music and dance for children, the exhibition of traditional professions (potters, quarries, blacksmiths, weavers, carpenters, bee keepers) and costumes was open permanently, Romanian traditional art dealers, Roman cuisine, painting exhibition on barrel stave “Story of Wine”, an exhibition wine selling. The second edition of “Roman Festival Zalău Porolissum” was considered by the local and central media a great achievement not only culturally but also financially and the mayor of Zalău declared his satisfaction for the success of this celebration, stating that this edition was a step forward from the first one.

News articles have been issued in relation to the event in the following national newspapers: *Adevărul*, *Evenimentul Zilei*, *Romania Liberă*, and also in regional and local press. The purpose of the third edition of the International “Roman Festival Zalău Porolissum” was to show people the Roman customs and traditions having also in view an open interaction of the public with history. The festival was centered on the present image elements which are valuable for the city respectively history, tradition, culture and also the youth, social involvement, art and European values. Regarding the creative concept of the festival, it was done primarily to create a strong visual identity of the event, and an easily recognizable theme. Because the celebration of the “Roman Festival Zalău Porolissum” was included in the circuit of Romans festivals in Central and South-Eastern Europe, it benefited from the promotion in the media, television and radio. Promotion was performed in Sălaj and four other counties, in order to increase the popularity of this event in the area of Transylvania and to attract tourists and active participants. Since the first day of the festival ecological traditional products and thematic symposium have been exposed, followed by master’s popular fair, an exhibition of traditional crafts and “women fair”. In the second day of the festival, the following events have been held in the street: a Roman debate, a show for children, band battle Legio XV<sup>th</sup> Apollinaris and Gladiatoria Panonnica Family presentation, a dance with ancient rites, Gipsy dances, old music concert, costumes parade, animation and juggling with fire. In the same day but in other location has been opened the military camp, followed by a demonstration of the fight Legio XV<sup>th</sup> Apollinaris, moments of gladiators fighting, Gladiatoria Panonnica Family, fights on horses Legio XV<sup>th</sup> Apollinaris and finally the military camp closing. Presentation and demonstration of Roman battles took place again at Porolissum-Moigrad camp in the last day of the festival (Figure 4).

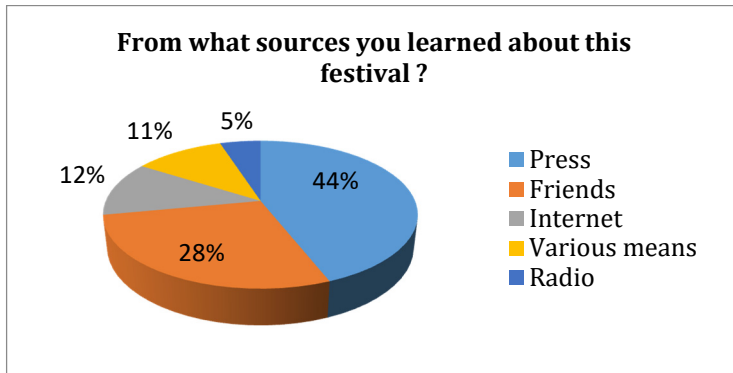


**Fig. 4.** Presentation of the battle bands to the Porolissum-Moigrad  
([www.zileleromane.ro/foto.html](http://www.zileleromane.ro/foto.html))

## THE ROMAN FESTIVAL ZALĂU POROLISSUM EVALUATION AND RESULTS

As a methodological instrument, we used the questionnaire method, regarded as a system of questions prepared so as to obtain accurate data on the impact of the Roman Festival Zalău Porolissum event on a person, social group, community and the city as a whole. In this study, we have used both open-response questionnaires, when the subject was free to respond as he thought fit, and closed-response questionnaires in which the subject was given several possible answers from which he chose the one considered convenient. This latter type of survey has the advantage that it is easy to complete and can be measured by the subject. By awarding points, quantitative differences could be established between those who completed the questionnaire. This type of survey has however the disadvantage that it may suggest answers that the subject would not have thought of. The questionnaire encounters two types of difficulties, one arising from the introspection features and the other one earning the trust of the subject to respond sincerely and earnestly. This latter disadvantage is encountered at the questionnaire as in the absence of a direct contact to the subject during the response, we have no clue how to appreciate his sincerity and his effective commitment (Andrei, 1997). To highlight the impact and the role given by the Roman Festival Zalău Porolissum to the local market, about two hundred participants have been questioned at the latest edition of the festival, our approach being chosen for the most representative questions and the results are presented and interpreted below in a graphical form. When asked, "From what sources have you learned about this festival?", answers were focused on the following options (Figure 5).

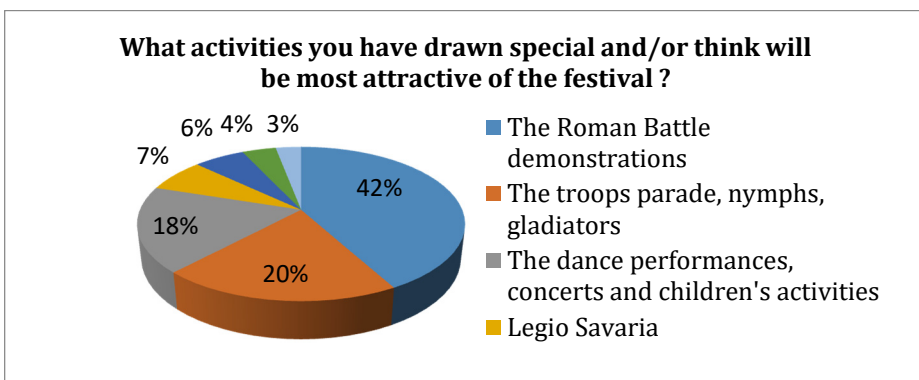
- 44% of respondents found out about the festival in the press, media, posters, flyers.
- 28% of respondents found out about the festival from friends, colleagues, relatives.
- 12% of respondents found out about the festival on the internet.
- 11% of respondents found out about the festival through various means.
- 5% of respondents found out about the festival from the radio.



**Fig. 5.** Rendering of answers to the question: *From what sources have you learned about this festival?*

When asked “What activities you have drawn special and /or think will be the most attractive of the festival”, the answers were as follows (Figure 6).

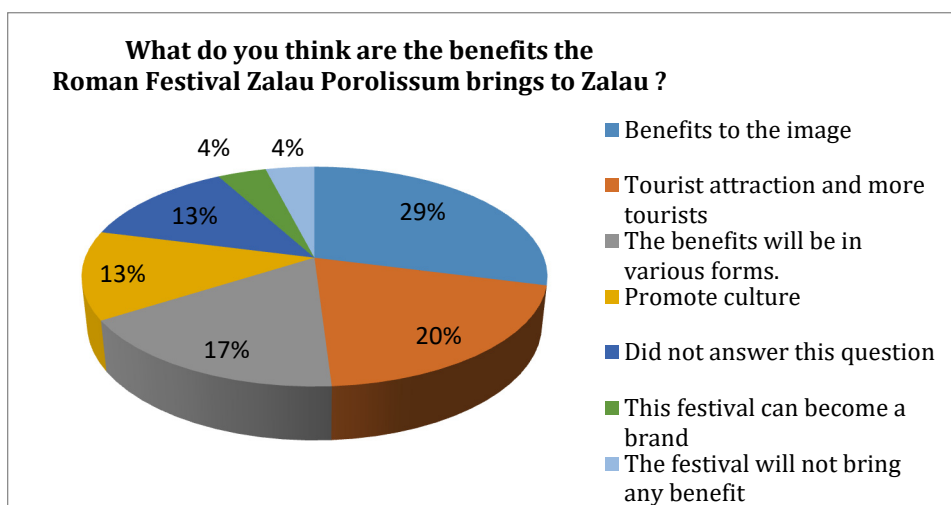
- 42% of respondents rated the Roman battle demonstrations.
- 20% of respondents rated the troops parade, nymphs, gladiators.
- 18% of respondents rated the dance performances, concerts and children's activities.
- 7% of respondents rated Legio Savaria.
- 6% of respondents rated the Roman cuisine.
- 4% of respondents did not find anything special at the festival.
- 3% were those who appreciated all the activities.



**Fig. 6.** Rendering of answers to the question: *What activities have you drawn special and / or think will be the most attractive activities of the festival?*

When asked “What are the benefits that you think the Roman Festival Porolissum Zalău brings to Zalău”, responses were centered on the following options (Figure 7).

- 29% of respondents believe there will be benefits to the image.
- 20% of respondents believe that the festival will become a tourist attraction and attract more tourists.
- 17% of respondents believe that the benefits will be in various forms.
- In equal percentages of 13%, those questioned believe that the benefits is to promote culture or did not answer this question.
- In equal percentages of 4%, those surveyed believe either that this festival of the city can become a brand, or that the festival will not bring any benefit.

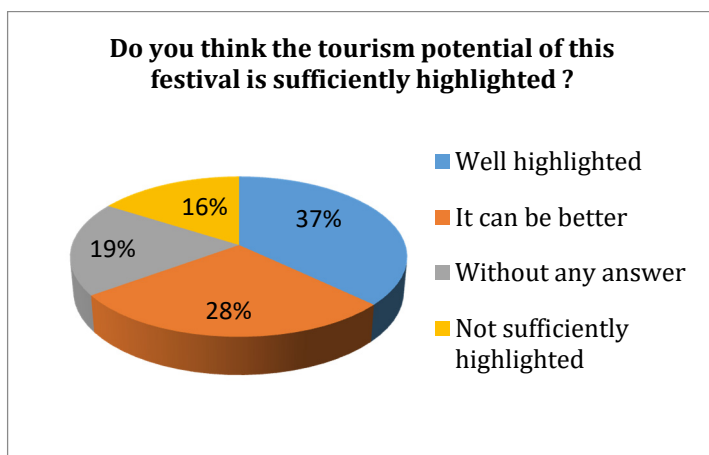


**Fig. 7.** Rendering of answers to the question: *What do you think are the benefits the Roman Festival Porolissum Zalău brings to Zalău?*

When asked “Do you think that the tourism potential of this festival is highlighted enough?”, answers were focused on the following options (Figure 8).

- 37% of respondents believe that is well worth.
- 28% of respondents believe that it can be better.
- 19% did not answer this question.
- 16% of respondents believe that the festival is not sufficiently highlighted.





**Fig. 8.** Rendering of answers to the question:  
*Do you think the tourism potential of this festival is sufficiently highlighted?*

## CONCLUSION

The strong points of the cultural tourism promoted by the Roman Festival Zalău Porolissum are: a great favorable position for tourism, in terms of national transit and European location; as a matter a fact, we underline that Zalău is situated at equal distances from a few large cities and capitals; the Roman camp Porolissum is best represented by the Praetorian Gate, which appears on the Sălaj escutcheon and which is already a brand known by many Europeans that are eager to discover more, representing one of the major attractions for cultural tourism in Sălaj; the value, dimensions and variety of the local and regional cultural patrimony; the festival managed to increase the European interest on the specific and culture history of Sălaj; the proper promotion on media channels; the realization of a site exclusively dedicated to the festival. Among the opportunities that this festival gives to the county, we mention: the increasing interest at the European level on the specific culture and history of Sălaj; the development of the cultural tourism; the intention expressed by the local institutions to collaborate; infrastructure development etc.

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## **BOOK REVIEW**

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### **Geacu Sorin, *Raul Călinescu – fondatorul biogeografiei românești*, Editura Curtea Veche, București, 2019, 333 p.**

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Doctor Sorin Geacu, a devoted biogeographer, with PhD degree acquired in both Geography and Biology, senior researcher in the Institute of Geography of the Romanian Academy and a unique researcher and explorer of libraries and archives, provides us with impressive documentation on the life and scientific career of prof. dr. Raul Călinescu – the founder of the Romanian Biogeography.

After the *Foreward* signed by the academician Dan Bălțeanu – the Director of the Institute of Geography of the Romanian Academy –, the manuscript is organized into 29 chapters, which follow, chronologically, the main steps in the professional development of the distinguished biogeographer. The biogeographical data are supported through illustrated documents (e.g. Bachelor's degree diploma in Geography – Natural Sciences; PhD and Docent diplomas in Biogeography). Graduate of the Faculty of Science of Cluj, under the mentorship of G. Vâlsan, R. Călinescu followed his urge to specialize in Biogeography. Moreover, working in the Zoology Laboratory of prof. A. Popovici-Băznoșanu (Faculty of Sciences of Bucharest), Călinescu has acquired expertise in the determination of many vertebrate species. With E. Racoviță, the promoter of the concept of species as morphological and geographical entities, as the President of his PhD Commission, Călinescu gained

the ability to mainstream geographical concepts in his work.

His 40-year teaching career was shortly related with the high school education, but it lasted much longer in the higher education, where he started his activity (from the time of his university studies) at the Botanical and Geography institutes of the Faculty of Sciences of Cluj University. In Bucharest, Călinescu began his activity at the Faculty of Sciences, first in the Laboratory of Descriptive Zoology and then, in the Laboratory of Physical Geography, evolving to the university assistant position in the Physical Geography Department, until 1956, when he became a full professor in Biogeography at the University of Bucharest. These main steps in his teaching career are illustrated through copies of 12 documents, as well as through 27 photos reflecting moments from the field works with his students.

R. Călinescu started his activity in the Institute of Geographical Research (Bucharest) since its establishment (1944), being one of its founders, where he had different management positions.

He also was the head of Biogeography Section. The copies of 8 documents and 13 photos show episodes from the various projects in which he was involved in this institute.

From his positions in higher education, he developed networking and cooperation activities with the research stations of Sinaia, Agigea and Eșelnița-Oroșova. The latter was led by Călinescu from its establishment (1964) until he passed away in 1970.

R. Călinescu started his research activity as a student, as a collaborator with the *Oltenia's Archives*, publishing different papers referring to the Oltenia region. Early in 1923, he launched the commendable idea of founding a *naturalist museum* in Craiova, which was established on December 2<sup>nd</sup>, 1923 – as a section of the existing Oltenia Museum (since 1915).

At the same time, Călinescu supported the founding of a *Naturalist Society*, which in 1928 has become the *Association of Naturalists of Oltenia and Banat*. As founder and president of this association, Călinescu organized numerous conferences. Meanwhile, Călinescu was having an assistant position in the Laboratory of Descriptive Zoology of the Faculty of Sciences in Bucharest. The basic functioning rules of the new Museum of Natural Sciences of Craiova were in line with the foreseen aims of the Association. Călinescu had insisted on the methodical research of the Cerna and the Iron Gates region, to elucidate the biogeographic problems related to the faunistic and floristic elements, relics and of Mediterranean origin.

From the sixth part of the book *Biogeography in Raul Călinescu's vision – definition, principles, methods, issues*, it appears that R. Călinescu promoted Biogeography in response to the request of his professor of physical geography in Cluj (namely G. Vâlsan). His call for Biogeography was encouraged and supported, also after his

employment as an assistant at the Laboratory of Descriptive Zoology of the Faculty of Sciences of the University of Bucharest.

For Raul Călinescu, Biogeography meant "*the geography of life*", a science "*with geographical principles and methods*", but in close connection with other disciplines such as Botany, Zoology, Biology, Paleontology, Paleogeography, Physical Geography and Human Geography. In his vision, Biogeography had to focus on "*biological facts, which mirror geographical conditions*". R. Călinescu saw the spreading areas of plant and animal species, in a permanent dynamic. In antithesis to the "stability" of relict and endemic species, the overlap of the spreading areas by the biogeographic methods was a way towards the identification of the "*zoogeographic centres*". The poly-area spaces were seen as "*geographical spaces in which several biogeographic areas overlap, of species formed in them, under the influence of special conditions*". Phytogeography and Zoogeography are the two branches of Biogeography, which Călinescu defined as "*the science that studies the geographical spread of living beings and their complexes (biocenoses) on the surface of the terrestrial globe, as an integral part of the geographical envelope, analyzing, at the same time, the historical (genetic) and ecological causes of this spread*".

For 40 years, Călinescu conducted research studies on Zoology and Zoogeography topics, which resulted in numerous papers, brochures, monographic volumes and maps. "*The mammals of Romania and their biogeographic-economic problems*" and "*The Sciuridae species of the R.P.R.*" are among his main synthesis works. In respect to the rodents, Călinescu was interested in the biology and the spread of poplars, squirrels, marmots.

He highlighted the need of reintroduction of marmots into the national fauna, an action which took place in 1973.

Since the early stages of his career, Călinescu was interested in the biology of mustelids. For the hooved species, he elaborated the first maps of their spreading areas. He published in three editions (1935, 1939, 1945) *The determinant of mammals for hunting in Romania*. Some of his articles referring to the mammals have been published in the Hunter's Journal. He wrote about dolphins, the *Monachus albiventer* seal of the Black Sea, the Australian dingo dog, the camels and the antelopes. He also published a biogeographic comparison between the mammals of Bulgaria and Romania.

The eighth chapter of the book refers to R. Călinescu's interest in the Romanian hunting cartography, richly illustrated with maps showing the spread of many species. In collaboration with other specialists, Călinescu has elaborated the *Biogeographic map of the world* and *The Map of Romania's plant and animal wealth*. These contributions, together with all the other maps he elaborated, represent a valuable documentary resource for further comparative research on the dynamics of fauna.

One of Raul Călinescu's youthful passions was related to the knowledge of the biology of reptiles. He followed this passion in his PhD thesis (in Geography), in which he studied the amphibians and reptiles in Romania. Călinescu emphasized that: "*the herpetological fauna of a country has double importance: a scientific one, on systematic and zoogeographic problems, and a practical one, these animals being of a valuable auxiliary of agriculture and forestry*".

The zoogeography of some invertebrates was mainly addressed in the

first part of his scientific activity. He was also interested in studying some species of plants, and in 1956 published the *Map of Romania's vegetation*, scale 1: 400,000, which is still considered a valuable teaching material.

Other studies of Călinescu focused on the biogeography of different regions: Oltenia, the South-Dobrogean territory, the surroundings of Bucharest, the Danube Delta, the Curvature Carpathians, the Danube Gorge, etc. He published also the *Biogeographic Regionalization of Romania*. Among his synthesis works, he published the *monographs of the Serpent and Ada-Kaleh islands* (1940), *Introduction to the Biogeography of Romania* (1946). Later, in 1957 he published the book *Life in the equatorial forests*. In 1960, he contributed to the elaboration of the *Geographical monograph of Romania* (fauna and vegetation), and in 1969, he coordinated the editorial activities for the publishing of the *Biogeography of Romania* treaty.

Dr. Sorin Geacu reveals to the readers another side of R. Călinescu's scientific interests, namely, his impressions from different research trips or field campaigns (the volumes *Crossing the Southern Dobrogea*; *Crossing the Bărăgan region – Icons from nature*; *The Danube – A touristic Waterway*; *The Eastern Mediterranean*; *In the surroundings of the Bucharest Capital*).

Raul Călinescu was very active in the newspapers of Bucharest (writing over 320 articles, notes, chronicles, reviews), promoting scientific knowledge. According to the author of this book, Raul Călinescu was an example of honouring the memory of his masters who inspired his passion for Biogeography: G. Vâlsan, E. Racoviță, Al. Borza, G. Antipa, I. Borcea etc.

Since 1967, the PhD professor do-cent R. Călinescu was the first to acquire a PhD degree in Biogeography. He was also the head of the “Zoogeographical Center” (1929-1930). R. Călinescu had also contributions focusing on fishing and hunting in the monographic campaigns (1935-1938), initiated by D. Gusti, in the Șant (Bistrița-Năsăud county) and Drăguș (Brașov county) communes. During the same period, he worked as an inspector of the Royal Cultural Foundation.

The founder of Biogeography coordinated the “Biogeographic Discussion Group” of the Faculty of Sciences of the University of Bucharest (1945-1948), promoting the biogeographic studies in the country. He was part of the editorial boards of some journals such as *Natura*, *Gazeta Vânătorilor* and *Probleme de Geografie*. Together with G. Antipa, they established the Zoological Garden in Bucharest. He was a member of several scientific societies in the country and abroad. In a distinct chapter, the author of this book presents the memories of some distinguished scholars from Romania about R. Călinescu.

In Chapter 26, readers could find the list of the 276 publications of Călinescu, published as papers in different journals, proceedings, synthesis volumes or maps and the list of the 327 newspaper articles that he wrote. In Chapter 28, the author presents the list of 52 reviews related to Călinescu's works and the list of the 59 reviews made by himself on the works of other authors. In the last chapter of the book, it is also presented the list of the 83 communications presented in a various conference held in Bucharest or elsewhere in the country.

The elaboration of this bibliography relied on 120 titles of works which have been consulted by the author. The last 6 pages represent the English abstract of the book. With this valuable biography, Dr. Sorin Geacu showed a great meticulousness and he is masterful in handling and organizing the impressive amount of documentary information about the life and work of Raul Călinescu.

Therefore, I consider that, apart of being devoted to the memory of the founder of Biogeography, this book is a valuable contribution to the knowledge of the history of scientific research in Romania, especially through the presentation of his impressive teaching and research activity. I congratulate the effort and the success of the author in presenting with extraordinary detail the complexity of Călinescu's life and career and I welcome this book full of knowledge, which is necessary for the libraries of all those interested in the history and evolution of biological and geographical sciences in Romania.

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## **BOOK REVIEW**

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### **MARCIN W. SOLARZ (ed.), *Atlas of Poland's Political Geography, Geopolitical Atlas, 2018, University of Warsaw***

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Marcin Wojciech Solarz is a professor of Geography and vice-dean at the Faculty of Geography and Regional Studies from the University of Warsaw. He is the author and editor of several important works in political geography and global studies, like "The Language of Global Development: A Misleading Geography" and "New Geographies of the Globalized World", both of them in the prestigious Routledge. His new recent project, under the national patronage of the President of the Republic of Poland, was dedicated to the political geography of the Polish state, one century after rebirth of modern Poland (1918-2018) and thirty years of regaining democracy (1988-2018).

The book combines political geographical analysis with the geopolitical consideration of one of the largest countries in the European Union, but also provides an excellent review of the current geography and policy of Eastern Europe, through a wide range of social, political and economic indicators for countries surrounding or related to Poland. The atlas has an introductory part, focusing on the original ideas about the state, its boundaries and location attributes and on the geopolitical concepts that establish Poland's role and position in Europe. These are followed by a wide range of maps, from

political to economic and cultural representations, in an outstanding cartographic condition.

Political Geography in Poland is one of the most visible in the scientific literature of this part of Europe. With a slightly longer history than the modern Polish state, the concepts developed in Polish political geography and geopolitics were strongly influenced by the **location** between two great European powers, Germany and Russia, and between Western and Eastern civilizations. The location is so important, that almost the entire book and analysis revolves around the concept. This position has been recognized as both a "geographical and historical fate" and a "director of life", giving the location the role of resource or constraint. This advantages or disadvantages have been accentuated by the lack of natural barriers to the East or to the West of Poland, which makes this space more open to change, but also more vulnerable. At the same time, Poland was viewed not in the middle of Russia and Germany, but in the center of Europe, with a tumultuous history. This history has been marked by the status of a regional power, of a partitioned state, two times in two hundred years, and of a recent new regional emergent economy. The relative location gave Poland the



role of an invasion route and a “barometer” of power relations between Germany and Russia: the state became a regional power when the two designated states were disorganized, defeated or eroded by internal conflicts or has disappeared at the time of the conflict or agreement between the two. Location has produced history and evolution is a product of location, between the centre and the periphery, as the margins of expanding empires.

The first part of the theoretical introduction is dedicated to that space and location in which Poland emerged, evolved, disappeared and reappeared on the European political map. As in other works by Marcin Solarz, the emphasis is on those geographical determinants that were the supporting pillars of the Polish state: Dnieper, Oder, Baltic Sea and Carpathians, limiting a space where the main geographical constant was Vistula River, as the most “faithful reflection” in the character of the Polish people. Wisła has always remained within the borders of the state and the capital Warsaw, central, while the territory had moved to east or west, between the Dnieper and the Elbe. If the last changes in the political configuration lasted since the World War Two, the new political map found Poland a stable country, while its neighbors, actors completely transformed: the new surrounding states emerged when communism collapsed and multinational federations disintegrated after 1989.

To describe the international environment in which Poland has evolved over a thousand years, the author identifies **three meta-concepts** associated with the past and present East-West and North-South relations. The concepts in-

itiated by important figure of Polish geography and political analysis argued that Poland was a transitional land (Wacław Nałkowski), a bridge country (Eugeniusz Romer) between the Baltic and Black Seas and a bulwark (Giedroyc-Miosroszewski doctrine) of Western Christianity. All this provides a framework for a geographical explanation of foreign policy and of the role that Poland has played throughout European history: a transmission belt of Western civilization, a shield to Ottoman Islamic expansion and a pioneer of resistance against communism, and expansionism.

The second part of the book, the atlas itself, contains a wide range of high quality maps providing a large variety of projections and cartographic perspectives at different territorial scales and GIS techniques. The maps offer a wide range of geopolitical indicators and an excellent review of Eastern Europe. Each entry contains information and excellent representation of the territorial transformation of Europe, of Poland and Polish people (in Poland and abroad), geo-economic dependence, cultural and diplomatic relations, freedom of movement, political and social demography, electoral behavior and representation, collective perception and attitude towards supranational associations or public space, economic performance, etc.

Every country has its political geography, but there are is much in common between Romania and Poland, the only communist states without a direct physical border with the Western world. These historical and geographical similarities make this atlas more interesting for the Romanian readers. The two states are not only the largest in the eastern part of the European Union, but

also the ones that are in the front run of the new geopolitical context post 2008. The shift in Russia's geopolitical actions in the first decade of this millennium, finds the two countries in the centre of the new containment policy and the geopolitical location become strategic for both the European Union and the North Atlantic Alliance, as the outer limits of the two supranational organizations. Many associations can be made in the geography, politics and history of the two countries, and the subject remains open to a careful analysis of the European course of the two states. It can also be a remarkable model for analyzing Romania's political geography.

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