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### Discontinuous Regions: High-Speed Rail and the Limits of Traditional Governance

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2 **Traditional Governance**

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34 **ABSTRACT**

35

36 Globalization and the interconnectivity of the economy have magnified the role of regions,  
37 restructuring social and economic relationships into networks that span increasing distances. At  
38 the same time, greater attention is due to localized urban quality, as non-vehicular modes and  
39 compact forms of development become critical in an environmentally conscious world. Within  
40 this context, increasing interest and adoption of high-speed rail (HSR)—a mode that addresses  
41 multiple scales—is unsurprising. HSR technology is used both to respond to existing trends of  
42 increased interconnectivity between urban centers and to enhance economic connections within  
43 regions and mega-regions.

44 HSR has the unique ability to enable long-distance commuting across discontinuous  
45 regions that are far enough apart so as not to be adequately integrated by auto travel. This new  
46 geography of daily experiences has important potential implications for governance and relations  
47 among cities.

48 Using Portugal as a case study, this paper examines the relationship between HSR  
49 development and new models of spatial organization and governance. Based on interviews with  
50 national and local officials, we discuss ways in which HSR planning is changing attitudes  
51 towards regional identity and urban governance, including: the integration of national entities  
52 into local planning processes, the potential for new models of commuting, and the role of HSR as  
53 an exogenous catalyst for regional cooperation.

54 The case study reveals how HSR can serve as a catalyst for governments to rethink  
55 regional identity, intergovernmental relationships, and competitive positioning. The prospect of  
56 HSR implementation raises the profile of potential intraregional complementarity and highlights  
57 the importance of inter-governmental relationships.

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59

60

## 60 ENVIRONMENTAL CHANGE AND SOCIAL CHANGE

61

62 Several decades ago in *What Time is this Place?* Kevin Lynch asked one of the oldest and most  
63 difficult to answer questions within urban studies: “What... is the relationship between  
64 environmental change and social change?” He goes on to enumerate various examples of this  
65 “loosely coupled” relationship (1). The simplest case is when a society wishes to alter its  
66 physical environment in a specific way—housing construction, irrigation, etc.—and so creates or  
67 alters organizations to accomplish the task:

68         Should we want to cause a major environmental change, it is usually necessary or  
69         expedient to make some selected social changes as well, particularly in the nature of  
70         institutions...These institutional innovations may in time have secondary effects  
71         elsewhere in the social fabric. (1)

72 The period of high-speed rail (HSR) development corresponds to a time of increasing focus on  
73 the spatial implications of globalized network economies. HSR can change the time-space  
74 landscape, blurring the distinction between inter-city and intra-city travel, between urban and  
75 periphery, between global and local. HSR has greater potential than air travel to affect  
76 urbanization patterns because of its ability to directly connect city centers and avoid the  
77 significant pre-boarding time associated with air travel. Its technology therefore is sought to  
78 enable the formation of polycentric agglomerations of urban areas—mega-city regions of  
79 networked nodes that act as functional economic units at the global level (2,3). Simultaneously,  
80 the complexity of information-based tertiary economies and the challenges of sustainability both  
81 emphasize the importance of localized urban quality. The rise of information technology, rather  
82 than heralding the death of cities, only seems to have augmented agglomeration economies, as  
83 face-to-face interaction and labor specialization become ever more important (4). HSR has a  
84 clear competitive advantage over other modes as long as it connects urban centers, thus joining  
85 existing urban mobility systems with new regional accessibility. Similarly, real estate  
86 development potential depends on station accessibility and local development policies (5, 6).

87         HSR development, therefore, occurs within a context that is simultaneously highly global  
88 and very local. The goals of HSR network development extend beyond the limits of single  
89 jurisdictions—to the regional, national, and even international (European Union) level. While  
90 HSR certainly creates the possibility of more sustainable economic growth, the realization of this  
91 promise depends, in part, on local land-use and accessibility planning, which in turn depends on  
92 local expectations of benefits from HSR. This research investigates perceptions and planning  
93 processes surrounding HSR at the national and municipal level within Portugal. It examines the  
94 relationship between large-scale environmental change and relevant multi-scalar social or  
95 governance changes.

96         This paper will be organized as follows. First, a historical perspective offers background  
97 on the relationship between transport and regional form. Next, a review of the arguments for  
98 regionalism is used to define the potential relationship between form and governance. The latter  
99 part of the paper presents the case of HSR planning in Portugal and demonstrates the role of  
100 large-scale infrastructure development as an external catalyst for changing approaches to regions  
101 and urban governance. While implementation of HSR in Portugal is currently postponed for the  
102 immediately foreseeable future due to fiscal austerity, lessons can nevertheless be drawn from  
103 the process up to this point. The suspended action, moreover, may create space for new thinking  
104 on the role of HSR in regional development. In this vein the paper’s conclusion proposes  
105 directions for future work.

106

## 107 **TRANSPORT AND METROPOLITAN DEFINITION**

108

109 The relationship between mobility and metropolitan form is much studied and, at least at a basic  
110 level, well established (7, 8, 9, 10). The spatial definition of a metropolitan region is the result of  
111 millions of individual decisions regarding residential, employment, and business enterprise  
112 location. When aggregated, these decisions create a complex web of activity locations and the  
113 mobility infrastructure connecting them. The dominant activity for many people is employment;  
114 therefore, metropolitan regions can be defined in terms of labor market reach. Given the stability  
115 of people's daily travel time budget (8), changes in transport technology result in changing  
116 metropolitan form. HSR is the latest in a long history of technology changes altering the  
117 relationship between space and time, and therefore the feasible realm of daily activities.

118

## 119 **THE REGIONALISM ARGUMENT**

120

121 Actively discussed, if less clearly implemented, is the notion that as metropolitan areas grow to  
122 span multiple jurisdictions, so too should scales of "urban" analysis, intervention, and according  
123 to some (11) governance.

124 The basic argument for regional governance goes as follows: Fragmentation of land use  
125 and transport policy leave each municipality to act in its own self-interest, pursuing policies that  
126 will maximize local property values, attract higher-income residents, and minimize the burden of  
127 demand for local public services (12). At this disaggregate level competition dominates. Each  
128 local government does its best to attract residents and revenue-generating businesses while  
129 avoiding undesirable land uses and lower-income populations.

130 Beyond the troubling social equity issues and the tendency towards less efficient uses of  
131 land, organization at this disaggregate level also cannot cope with the needs of larger systems.  
132 For example, effective watershed management, minimization of land consumption, congestion  
133 mitigation, and larger-scale energy policies all require levels of organization at a broader  
134 geographic scale.

135 Transportation, as a network phenomenon, presents a particular challenge at the  
136 disaggregate level. Well before the advent of the automobile era, labor markets began to span  
137 multi-jurisdictional regions. Despite more recent attempts at using land use planning to shorten  
138 trip distances (13) daily commutes seem ever more likely to cross jurisdictional boundaries (10).  
139 Moreover, spatially dispersed networks of clients and service providers have been continually  
140 increasing the demand for regional business travel (2).

141 It should come as no surprise then that the push for a larger scale of regional government  
142 has often been associated with the demand for rational mobility planning at a scale that matches  
143 expanding daily activity zones. In the United States, Metropolitan Planning Organizations  
144 (MPOs) were created to coordinate the investment of federal transport funding. In some places  
145 this legislatively mandated form of governance has attracted other regional duties. San Diego's  
146 MPO, for example, has since the 1970s gradually accumulated the responsibilities of land use  
147 planning, housing needs determination, and spending of state sales tax revenue (14). Other forms  
148 of regional transport-related governance include "special-purpose governments" (14) such as  
149 transit agencies and the more recent federally mandated Intelligent Transportation System (ITS)  
150 Architectures (15), which ensure consistency of ITS projects thereby de-facto creating inter-  
151 governmental and inter-agency cooperation to establish and manage the "architecture." Moving  
152 up to the scale of mega-regions, the current HSR-planning process in the Northeast Corridor of

153 the United States is being managed by the Federal Railroad Administration (FRA) in cooperation  
154 with multiple states. To meet these larger-scale concerns, the FRA is making a transition from its  
155 prior regulatory role towards more strategic thinking.

156 Consideration of the relationship between transport and metropolitan form has of late  
157 expanded to encompass larger and larger geographies. In the European Union (EU), in particular,  
158 spatial policy is explicitly linked to transport policy, and backed by structural cohesion and  
159 European Investment Bank funds. In the last decade the EU prioritized national and international  
160 HSR connectivity. The program for the trans-European transport network (TEN-T) includes 14  
161 out of 30 high priority projects dealing with high-speed service (16). EU policies also  
162 incorporate explicit goals of promoting multi-nodal (polycentric) development. European  
163 transportation policy, therefore, incorporates an intention of altering or at least promoting new  
164 forms of spatial organization. The European Spatial Development Perspective (ESDP) promotes  
165 polycentricity at the multinational scale, seeking to support development outside the dominant  
166 'Pentagon' of North West Europe (2). Portuguese national policy addresses similar goals of  
167 "economic and social cohesion" but at the smaller regional scale of polycentricity.

168 Built into both scales of policy is an attempt to deal with inherent tension and  
169 interdependence between the global and the local: "polycentric regions are believed to eliminate  
170 the social and environmental disparities of monocentric cities and to be better equipped to  
171 contribute to global competitiveness" (11). The motivation for HSR development in Portugal  
172 (now suspended due to the financial crisis) originally followed this line of reasoning:

173 It results at least partly from a voluntary approach from the Portuguese authorities to  
174 create a mega-region between Lisbon and Oporto that could transcend the small  
175 demographic dimension of Portuguese cities and put them in a paradigm of networked  
176 cities in order to dissociate the relations between dimension and urban functions (18).

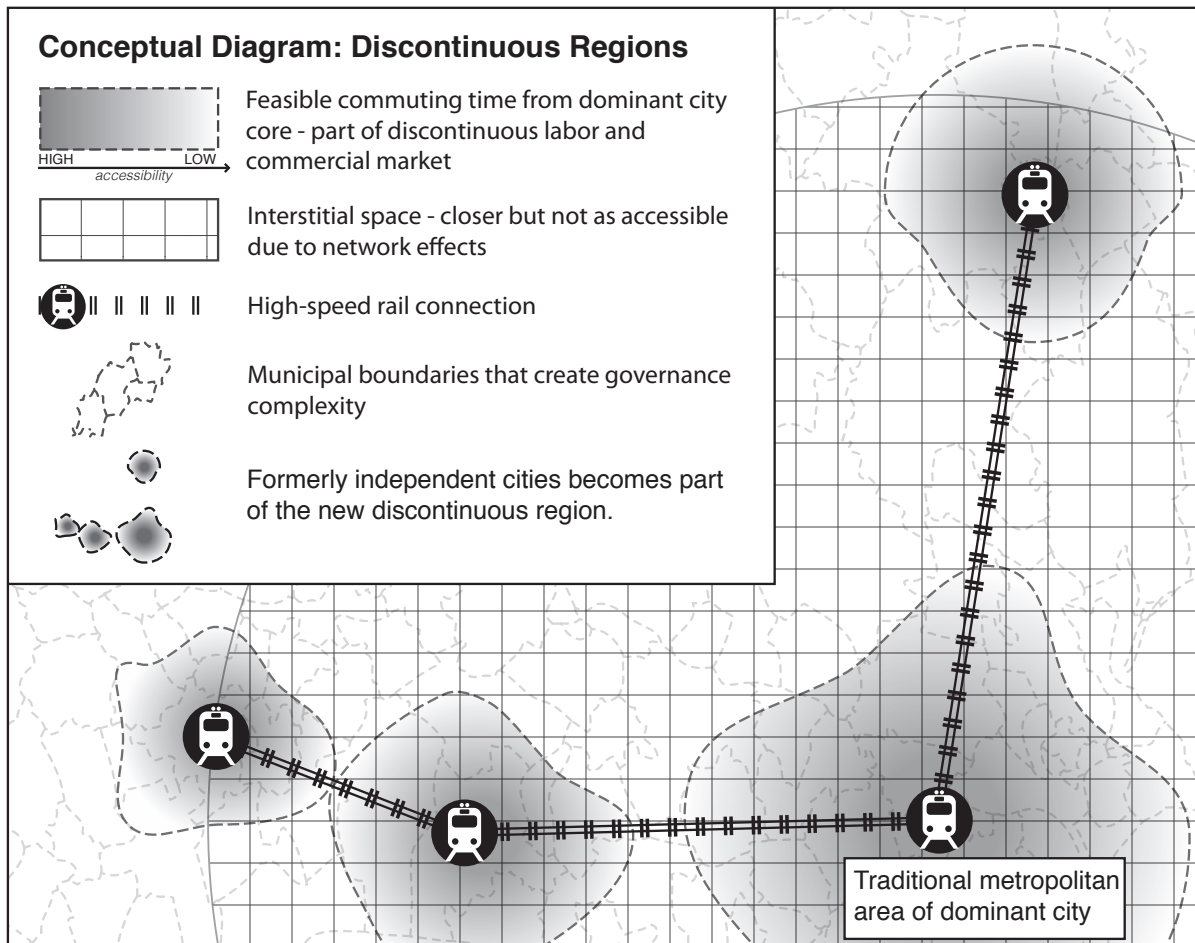
177 When issues span larger geographic scales, policy becomes less about the give-and-take of  
178 government officials trading benefits for local constituencies. Instead, in a globalized urbanizing  
179 economy, the success of one area depends in a more immediate way than previously on the  
180 success of a project in another not necessarily spatially contiguous area. While conventional rail  
181 already operates in Portugal, it is hoped the increment in accessibility provided by HSR will  
182 support unprecedented regional integration. HSR and its potential to create discontinuous  
183 regions—single labor and commercial markets that span large distances but do not include all  
184 intermediate areas—is a paradigmatic example of a network phenomenon that demands  
185 reconsideration of cooperation and control across scales and space.

186 The theoretical arguments for regionalism satisfy an intuitive sense that a problem should  
187 be matched in scale and form by the tools used to address it. The mirroring of networked society  
188 by networked governance is conceptually attractive; nevertheless, the actual development of  
189 regional cooperation is by no means straightforward. Barring formal regional government,  
190 collaborative management of larger-scale planning falls under the newer concept of *governance*:

191 Since at least the 1990s, a general conceptual and practical shift has emerged, away  
192 from a "classical," territory-based, hierarchical structure (i.e., "government") and towards  
193 more fluid, de-territorialised, network-based, multi-actor structures (i.e., "governance")  
194 (19).

195 As such, the incentives for and expected benefits of collaboration must outweigh transaction  
196 costs and overcome institutional barriers to cooperation. As Rayle and Zegras discovered in a  
197 study of inter-municipal collaboration in Portuguese metropolitan areas, the emergence of  
198 collaboration depends on quite a number of factors including the legal and institutional  
199 environment, prior existence of intergovernmental networks of interaction, and—most relevantly

200 for the case of HSR—on an external trigger “that prompts potential partners to reevaluate their  
201 situation and consider collaboration” (19).



202  
203 **FIGURE 1 Discontinuous Region.**

204  
205 Rayle also discusses the importance of inter-municipal competition as a constraint on  
206 cooperation and postulates the role of higher levels of government in incentivizing cooperative  
207 action. She recommends that the central government disburse funds at the metropolitan level in  
208 order to provide a significant enough incentive to overcome the competitive “zero-sum context  
209 of metropolitan planning” (19).

210 The case studies of HSR reported in the latter part of this paper reveal a twist on the  
211 competition effect: the expected changes in accessibility (and therefore in the competitive  
212 landscape) within Portugal may actually motivate cooperation between municipalities. The threat  
213 of losing out to Lisbon is beginning to alter expected outcomes of municipal collaboration within  
214 the central region of Portugal. In the same way that at the national level Lisbon is seeking to  
215 network with its surrounding cities and so become more competitive at an international scale,  
216 Leiria and particularly Coimbra are interested in networking at the more regional scale so as to  
217 not lose out within the national (and to a more limited degree, international) arena.

218 Parallel to the literature detailing institutional collaboration is a body of work dealing  
219 with the benefits and challenges of stakeholder involvement in decision-making processes.  
220 “Stakeholder” refers not only to members of the public but to “any group or individual who can

221 affect or is affected by the achievement of the organization's objectives” (20). Recently, ideas of  
222 collaborative adaptive management have moved stakeholder approaches away from one-time  
223 consultation to provisions for ongoing management. The nature of rapidly changing, unstable  
224 and “increasingly networked societies,” demands a conversion of planning into ongoing cycles  
225 of implementation and learning aimed not only at approaching the public interest now, but also  
226 capable of evolving to fit changes and provide management into the future (21). The land-use  
227 transport sector is characterized by long timelines for project development and realization of  
228 impacts. Thus, ongoing collaborative management is a particularly salient approach to the  
229 involvement of multiple levels of government. Coimbra’s urbanization plan is one case of a  
230 national entity engaging with local government as an ongoing management partner critical to the  
231 success of a much larger endeavor.

232

### 233 **PORTUGAL: INSTITUTIONAL BACKGROUND**

234

235 Before investigating the specific case of HSR planning in Portugal, it is important to explain its  
236 institutional context. In Portugal there are four legally defined levels of spatial organization: sub-  
237 municipal or freguesia, municipal, regional, and national. In reality the vast majority of power is  
238 concentrated at the municipal level and national level. Regional governance encompasses a  
239 patchwork of entities beholden for power and resources either to national or local governments  
240 (19). In 1991, metropolitan governments were established for Lisbon and Porto. Appointed  
241 municipal representatives serve to coordinate planning activity. In 2003 this concept was  
242 expanded to enable a variety of municipal coalitions, with criteria based on population size and  
243 level of urbanization (22). The scope of potential local action has also increased in recent years.  
244 Under the principle of ‘general competence,’ local government may undertake any action for the  
245 wellbeing of its residents (23). Greater financial resources do not necessarily accompany this  
246 freedom but it has played a role in the diversification of public service delivery modes across  
247 municipalities in Portugal (23).

248

249 Portugal has also experienced significant socioeconomic restructuring since its entrance  
250 into the EU in 1986. In particular Lisbon, Portugal’s dominant metropolitan region, is now part  
251 of the globalized service economy: by 1991, 70% of total employment in the Lisbon region was  
252 in the tertiary sector (23). Economic change is accompanied in turn by spatial and governance  
253 changes:

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There has been a shift from what was still a single centre city in the late 1960s, to a poly-  
nuclear metropolitan area by the beginning of the twenty-first century. The reality of an  
increasingly complex, diverse and rapidly developing city strongly interrelated with its  
broader city-region has brought increased recognition of the limitations of current  
governance systems and spawned the emergence, in a largely fragmented and  
evolutionary manner, of a range of new governance arrangements (23).

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The case studies in the next section will be used to investigate HSR’s potential to extend this  
process from the more traditional metropolitan scale to the scale and form of new discontinuous  
regions.

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As is so often the case, Portugal’s economic growth was unfortunately accompanied by  
sprawling development. The 2010 *State and Outlook* report released by the European  
Environment Agency (EEA), an agency of the EU, cites concerns over “Disorderly urban  
expansion causing fragmentation and degradation of surrounding areas (affecting quality,  
ecology, production and landscape potential and contributing to the depopulation and  
deterioration of other areas)” (24). This degradation, the report points out, is compounded by



268 “Insufficient transport intermodality, too much dependency on private vehicles and insufficient  
269 development of other transport modes such as rail” (24).

270 HSR ostensibly offers the means to develop economically without associated sprawl and  
271 auto-dependent mobility. The realization of this potential depends to a large degree on local  
272 planning and policies that support “train station-oriented development” (25). Municipalities in  
273 Portugal are responsible for managing a broad spectrum of local services including urban  
274 planning and public transportation (except in the Lisbon and Porto metropolitan area) (22). Of  
275 particular interest given the importance of access and egress to HSR stations is the structure for  
276 local provision of transit. Porto and Lisbon have their own funding structure and relationship to  
277 the central government. Elsewhere municipal governments are responsible for funding local  
278 transportation. There are no central government subsidies for municipally owned transportation  
279 services, with the exception of capital project grants. Operating subsidies from the central  
280 government are distributed exclusively to state-owned enterprises, such as the *Metro do Porto*,  
281 not to municipalities. EU Structural Funds can be applied to specific projects at a local level.  
282 These funds are, however, administered by the central government (22). Increasingly important  
283 inter-city bus routes are operated by private companies and licensed by IMTT, the national  
284 transportation regulator. Only ad-hoc coordination exists municipal and regional private  
285 operators (Interview, SMTUC, unpublished data).

286 Finally, municipalities bear the greatest responsibility for shaping development and land  
287 use. While strategic planning occurs at the national and regional scales, the Plano Director  
288 Municipal (PDM) or municipal master plan is the regulatory zoning instrument used to  
289 implement spatial strategies (22). No formal mechanisms exist for coordinating land use  
290 decisions and public transportation service (Interview, SMTUC, unpublished data).

291

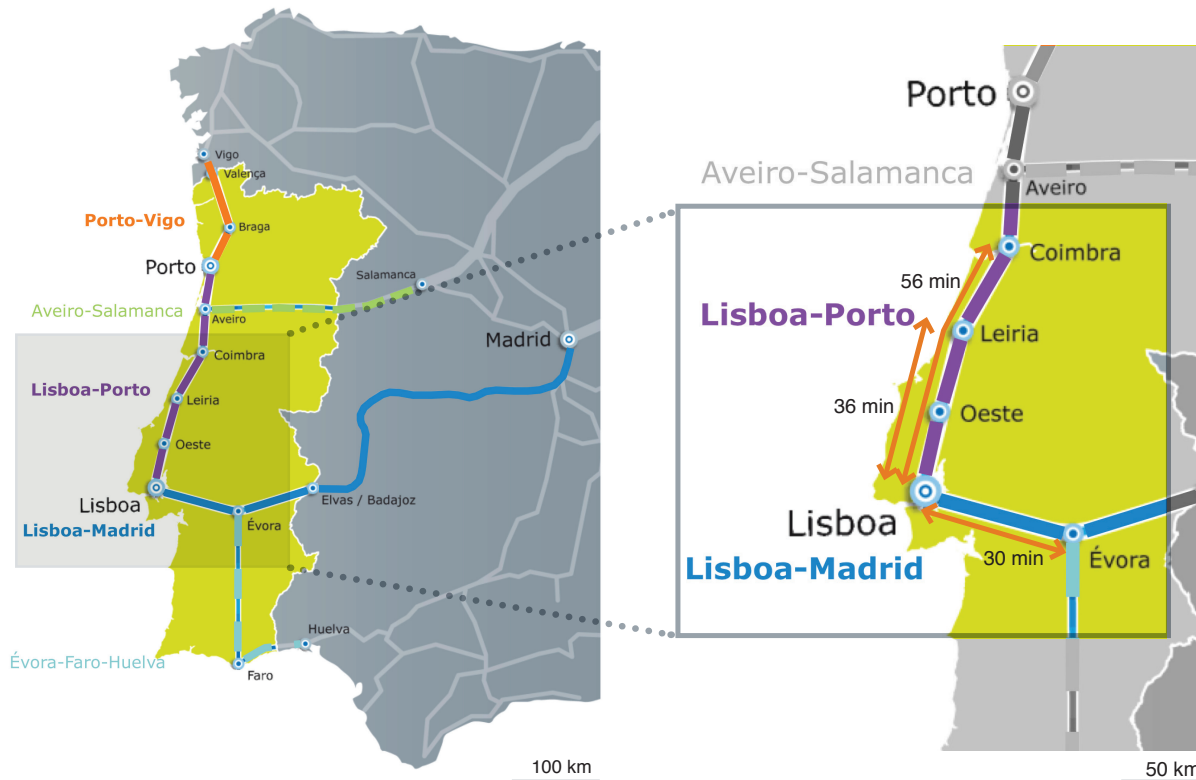
## 292 **PLANNING FOR HSR IN PORTUGAL: THREE CASES**

293

294 The following study of three cities in Portugal; Évora, Leiria, and Coimbra; is based primarily on  
295 information collected during interviews with national and local officials in January 2012.

296 HSR planning in Portugal has focused primarily on two axes: one heading west  
297 connecting Lisbon and Madrid and another within the densely populated coastal region,  
298 connecting the two largest cities of Porto and Lisbon. This research focuses on three cities that  
299 could feasibly be brought within commuting distance of Lisbon by HSR investment. Évora is  
300 located on the Lisbon-Madrid axis, approximately 135 road kilometers (84 miles) from Lisbon.  
301 This city of 50,000 would be brought within a thirty-minute trip (station-to-station) of downtown  
302 Lisbon by HSR. Both Leiria and Coimbra are located along the north-south HSR axis. Coimbra  
303 is the third major city in Portugal, located 200 road kilometers (124 miles) north of Lisbon.  
304 Leiria is located 70 kilometers (43 miles) south of Coimbra. HSR would bring Leiria and  
305 Coimbra within 36 and 56 minutes of Lisbon, respectively, although time to connect actual  
306 origins and destinations would of course be greater.

307



308  
 309 **FIGURE 2 Proposed HSR network** (Adapted from The Portuguese High Speed Rail Project.  
 310 Presented, Rede Ferroviária de Alta Velocidade (RAVE), Moscow, April 2004).  
 311

312 Prior to visiting each municipality, an initial interview was conducted at the Lisbon  
 313 offices of REFER, the national rail agency charged with planning HSR. Of primary interest here  
 314 was to ascertain the degree of national-local interaction in the HSR planning process. As part of  
 315 the formal environmental impact assessment (EIA), municipalities were provided with  
 316 alternatives for comment. A primary issue at this stage is station location. Not only does a  
 317 station's proximity to a city's activity center affect the degree of connectivity into the local urban  
 318 economy, it also—because of expectations about the level of impact—affects the degree to  
 319 which municipalities feel they should engage in the national HSR planning process. Évora was  
 320 only presented with one possible station location in the EIA, with various alignment differences  
 321 considered. For Leiria, sites to the east and the west of the city were analyzed, with the western  
 322 site ultimately selected. In Coimbra, by contrast, the initial pre-EIA proposals located the station  
 323 significantly outside the city. Political pressure altered the proposed location to a site north of the  
 324 city's two conventional rail stations, in a relatively underdeveloped area. In all cases, national  
 325 policy priorities dictated that stations should have some connection to the conventional rail  
 326 system.

327 Also affecting the level of impact expected by each municipality is the increment in  
 328 accessibility resulting from planned HSR. Évora is at present served by four trains per weekday  
 329 in each direction with a travel time of 1 hour and 58 minutes (27). The planned frequency for  
 330 HSR would be 12 trains per day and 30-minute travel times (Lopes, unpublished data). The  
 331 primary conventional rail Norte line does not currently serve Leiria. Accessibility by rail is very  
 332 low, with five trains per day from Lisbon, only two of which do not require transfers, and all of

333 which are slowed by the frequency of intermediate stops. Bus and private automobile are the  
334 primary means of access to Lisbon from Leiria.

335 Coimbra, as one of Portugal's major cities, important for both its educational institutions  
336 and cultural history, is currently served quite well by the rail system. With more than hourly  
337 frequency between Lisbon and Coimbra for most of the day, along with the higher speed "Alfa  
338 Pendular" tilting-train service, rail is already a competitive option for travel between Coimbra  
339 and Lisbon, although as in all of Portugal the competition from the private automobile has  
340 increased. The proposed HSR would reduce travel times from 2h05 for intercity service  
341 (Intercidades) or 1h51 for the Alfa Pendular to just under an hour (27), pushing service under the  
342 threshold for reasonable daily commuting times.

343 The three sets of interviews with local government officials and planning staff in these  
344 cities revealed shared conceptions of how HSR can change regional identities and the demands  
345 placed on urban governance. These are discussed in detail below.

346

### 347 **HSR Commuting and Social Impacts**

348

349 Beginning with the effects of HSR on the urban experience, city officials in both Évora and  
350 Coimbra independently mentioned new modes of commuting that might emerge or be augmented  
351 by the provision of HSR service. In Évora, teaching faculty and senior management  
352 professionals were proposed as demographics that might live in Évora and commute to Lisbon  
353 for part of the week (or vice versa). According to Arq. Pereira (unpublished data), it is not  
354 uncommon for faculty to teach at multiple institutions and therefore have multi-destination  
355 commutes. Similarly, senior management professionals with multiple business locations and/or  
356 the flexibility to work from home might use HSR to commute part-time. The planning officials  
357 in Évora emphasized the city's quality of life as an asset that might attract people who wish to  
358 live in the city and commute into Lisbon. Évora is located in what could be characterized as an  
359 idyllic agricultural setting and is famous for its historic city center. The city planners, while  
360 excited about HSR, are apprehensive about the social effects of potentially dramatic population  
361 change. The city feels strongly about maintaining the strength of its core and for this reason has  
362 already turned down one proposal for a new service-industry development in the vicinity of the  
363 station, 9km from the city center. The projects as they saw it would have become an independent  
364 entity and thus deliver primarily external benefits. This choice brings the development  
365 challenges of a non-central station into focus.

366 The perspective on commuting was similar in Coimbra: Because of the University and  
367 various health institutions, the city boasts considerable intellectual capital. Unfortunately, much  
368 of that knowledge base is lost once students complete their education. Coimbra's greatest  
369 expectation with respect to the HSR project and the associated urbanization plan (discussed  
370 below) is to retain its knowledge base. At present, people relocate to Lisbon or Porto to find jobs.  
371 The city officials want to increase housing supply and develop Coimbra as a residential base for  
372 commuting outward. One desirable model would be to have people live in Coimbra and then  
373 work a few days a week elsewhere and a few days in the city. This model is most applicable to a  
374 specific socioeconomic class (academic, health) that lends itself to part-time commuting. The  
375 reasoning, according to city officials, is that Coimbra can provide a more relaxed residential  
376 environment (than Lisbon or Porto) while still maintaining easy access by train to the cultural  
377 and social aspects of the bigger cities (Interview, Coimbra, unpublished data).

378           The idea of commuting for part of the week or to multiple destinations is consistent with  
379 other research: A recent report cites the fact that “many workers are not required to appear in one  
380 office five days a week” as one of the major drivers of increases in super-commuting (28).  
381 Similarly, the POLYNET study, published in 2006 and aimed at defining more closely the  
382 concept of polycentricity, revealed the importance of intraregional mobility to the extent that for  
383 some professionals, “the nature of their work may make a regular daily commuting pattern  
384 impossible” (2).

385           The difference between “super-commuting” or even longer distance business travel by  
386 other modes and regional HSR is that HSR commuting would no longer necessarily refer to the  
387 tail-end of the distribution of willingness to travel, but rather (assuming adequate station  
388 accessibility, a significant assumption) to a set of travel times within the normal range of  
389 commuting behavior, even if distances are in the range of “super-commuting”. It is therefore  
390 important when thinking about HSR and its effects on labor-market definition to consider the  
391 potential for associated social change. Not all people are equally likely to commute via HSR or  
392 to relocate to smaller connected cities. Demand studies are important not only to predict the use  
393 of the transport service, but also to understand the much broader socioeconomic changes that  
394 might come with an altered metropolitan region (29).

395           The rearrangement of spatial and economic relationships within a region, while  
396 influenced by contemporary forces of globalization and supported by new infrastructure like  
397 HSR, nevertheless does not begin with a tabula rasa. New functional networks are overlaid onto  
398 an existing urban landscape (17). As a result, cities may develop dual identities, simultaneously  
399 existing in relative self-sufficiency, with a given labor market structure and socioeconomic base,  
400 and as networked entities within a new “discontinuous region.” Ciudad Real in Spain, for  
401 example, now combines the characteristics of an isolated small city and of a suburban district.  
402 Located 112 miles from Madrid and linked via a 51 minute HSR trip as of 1992, this relatively  
403 small city (population 65,703 in 2003) has some of the best-documented small-city-to-large-  
404 metropolis commuting via high-speed rail (29).

405           More notable than the existence of commuting itself is the social differentiation of the  
406 “Avelinos,” as they are called—from AVE, Alta Velocidad Española. A survey conducted by  
407 Garmendia et al. found that households that choose to locate close to the Ciudad Real HSR  
408 station tend to be owners rather than renters and are more likely to have children than the city  
409 average. They attribute this to expanded metropolitan-level location choices; people interested in  
410 the Madrid labor market but in less permanent family situations would be more likely to rent and  
411 therefore could be accommodated within the contiguous metropolitan area. Families, on the other  
412 hand, chose to relocate so that they can afford more space. The survey also revealed that 39% of  
413 daily commuters to Madrid were born outside the province of Ciudad Real (29). “Avelinos,” the  
414 new class of HSR commuters, possess partially distinct socio-demographics from the prior city  
415 population.

416           In the longer-run, these kinds of changes may have implications for social relations and  
417 for the demand profile for public services imposed on a local government. Prior to deployment,  
418 the HSR planning process should incorporate awareness of possible social implications and raise  
419 questions at the local level about whom the HSR investment is intended to serve. Is it most  
420 important to consider convenience factors (e.g. multimodal coordination) that cater to multi-  
421 destination business travel? Or perhaps, as officials in Évora and Coimbra hinted at, the points of  
422 influence are those that address “residential environment” choice to cater to more diverse and  
423 mobile households (17). In reality, the market for all large-scale infrastructure can (and should)

424 reach across groups. Nevertheless, asking user-oriented questions can guide decisions at the  
 425 municipal scale and begin to address what it means, in terms of local decisions and everyday  
 426 experience, to be integrated into a discontinuous region.

427

### 428 **Governance and Coordination**

429 Next, the municipal interviews in Coimbra and Leiria, along with interviews at REFER, revealed  
 430 changing views of intergovernmental relationships and the need for coordination. Évora, because  
 431 of its external proposed station location and relative isolation from neighboring population  
 432 centers, has less inducement to consider cooperative governance in response to HSR. Coimbra  
 433 provides an example case in which a national agency (REFER) views a local entity as an  
 434 indispensable partner in the development of a large-scale system. As discussed earlier, the  
 435 economic benefits of HSR depend very much on local development. Moreover, land use  
 436 planning requires a long timeline and ongoing management. For this reason, REFER and the  
 437 municipality of Coimbra have entered a formal cooperative protocol. Together they are  
 438 managing a 100-hectare (247 acre) urbanization plan to develop the HSR station area into a new  
 439 city gateway.

440 Under this plan, HSR is but one piece of a multimodal hub and new urbanization area  
 441 that will serve both the city and the region. The Coimbra housing market is high-priced; the  
 442 presence of high-income professions (doctors, nurses, teachers, engineers, upper-level state  
 443 employees) along with a sizeable student population—the majority of whom are from outside the  
 444 city—pushes prices up for the existing supply of housing (Interview, REFER, unpublished data)  
 445 and thus contributes to the development potential of the station area. Involvement of REFER in  
 446 local planning was actually a way to reduce transaction costs: the overall project will still need to  
 447 get approval from all involved parties but REFER offers extra management and financial  
 448 resources to speed up the overall planning process (Azevado, unpublished data).

449 The most interesting aspect of this national-local cooperation is that it shows evidence of  
 450 creating spillover effects beyond the single-issue of HSR. Under the current financial situation,  
 451 there are three possible scenarios for the urban plan and station in Coimbra:

- 452 1) A national HSR public-private partnership (PPP) goes forward as initially planned by  
 453 REFER with the Coimbra station plan embedded in it.
- 454 2) An HSR PPP goes forward but the station is not included and is instead built as a separate  
 455 project under REFER's full control. This approach would make detailed collaboration  
 456 between REFER and Coimbra easier.
- 457 3) *No HSR PPP materializes. Planning of the station and development of the urban plan*  
 458 *continues until funding can be procured. The HSR aspects are left out of the intermodal*  
 459 *station (tracks, escalators, etc.) but without precluding their future addition.*

460 Although the HSR project in Portugal has been suspended, the urbanization plan in Coimbra is  
 461 ongoing and considered important enough to continue (at least in planning) regardless of the  
 462 HSR situation. Nevertheless, there are constraints associated with complex multi-scale planning  
 463 processes. Many years of anticipation of a new station for Coimbra have preempted more  
 464 incremental improvements to the existing rail stations.

465 In addition to the entry of a national agency into a local planning process that extends  
 466 beyond the single issue of HSR, representatives from both Leiria and Coimbra cited HSR as a  
 467 reason to reconsider institutional relationships within the central region of Portugal. In both cases  
 468 the double-edged sword of increased accessibility via HSR is motivating changing attitudes.  
 469 While shorter travel times from Lisbon mean that Coimbra and Leiria might attract more visitors,

470 the compressed trip time also runs the risk of eliminating overnight stays. City officials in  
471 Coimbra and Leiria recognize that their cities' competitiveness within the tourism and business  
472 tourism industry depends on their ability to be part of multi-day multi-destination trips.

473 In Leiria the opening of a new highway connecting to Fatimah, a major pilgrimage site,  
474 and the possibility of HSR connectivity are reasons, according to city planners, that Leiria might  
475 rethink its currently competitive relationship with Fatimah. Similarly Coimbra is considering a  
476 shift away from regional competition to a more cooperative approach. A regional association of  
477 tourism was previously established but Coimbra chose not to become a member. The  
478 organization was established by the central government and from Coimbra's point of view was  
479 too large, had inappropriate sub-regions, and did not pay adequate attention to Coimbra.  
480 Objecting to the headquarters' location in Aveiro, the city refused to participate and created its  
481 own authority. Now, while there are still two authorities, the relationship between them is more  
482 relaxed. The current municipal government understands that collaboration is needed and that  
483 they have to be able to market the whole region, not just the city, in order to compete  
484 (Interviews, Coimbra and Leiria 2012).

485 Coimbra and Leiria are additionally reconsidering regional mobility planning in response  
486 to the external catalyst of HSR. Leiria and the adjacent community of Marinha Grande are 10-12  
487 minutes apart by car and interact extensively, effectively sharing their labor market. The  
488 municipalities have for many years discussed an inter-municipal transportation plan. The  
489 planning staff in Leiria views HSR as the sort of catalyst that might push the municipalities past  
490 the transaction costs/expected benefits threshold towards cooperation. Coimbra is eager to have a  
491 regional transport authority to define rules and coordinate both public and private transport  
492 operators. Current trends of suburbanization and increased inter-city commuting within the  
493 region around Coimbra mean that the city is already struggling with inadequate regional mobility  
494 planning (Interview, SMTUC, unpublished data). The introduction of HSR would magnify this  
495 existing gap. The proposal for a regional transport authority is included in the city's formal  
496 strategic plan document, as the creation of such a body would depend on the central government  
497 for definition and authorization.

498

## 499 **CONCLUSIONS AND FUTURE WORK**

500

501 Returning to Lynch and the question of institutional innovations causing secondary effects, there  
502 is much yet to study in the relationship between HSR, discontinuous regions, and governance.  
503 As we have seen, HSR can serve as a catalyst for governments to rethink regional identity,  
504 intergovernmental relationships, and competitive positioning. From an intentional policy  
505 perspective, however, our understanding must develop beyond the descriptive relationship  
506 posited thus far: transport changes regional form and form can change attitudes towards  
507 governance, which can in turn continue to redefine the spatial and functional organization of a  
508 region. For these reorganizations to happen in any intentional manner, more clearly defined  
509 expectations, across scales of government, are needed at the outset.

510 Practice-oriented analysis must recognize that if new functional systems result from HSR  
511 investment, these will necessarily be overlaid on existing spatial, governmental, and economic  
512 configurations of cities and towns. Because of the global importance of information-based  
513 network economies, there is a temptation to focus on purely functional definitions of regions, in  
514 terms of flows of people and information. Nevertheless, the morphology of urbanized space still  
515 matters. Environmentally, the interstitial spaces of discontinuous regions have the potential to be

516 subjects of spatial planning aimed at preserving biodiversity through the avoidance of habitat  
517 fragmentation and the preservation of natural systems (watersheds, for example) (30). Without  
518 policy aimed at compact development, the environmental good of discontinuous regions is by no  
519 means guaranteed. From the perspective of government, space matters because it is the unit of  
520 control. Functional relationships that define economic networks or labor markets are inherently  
521 fluid and semi-de-territorialized; one cannot simply define a higher level of government to make  
522 more “optimal decisions” because the scale and boundaries of the functional economic unit are  
523 not fixed. Moreover, economic networks are layered and differentiated across sectors and across  
524 scales. One city may simultaneously exist within regional and international networks and each  
525 role may possess a degree of mutual independence (2). Thus, *governance* and the creation of  
526 relationships between units and levels of *government* remains a necessity. In order for  
527 cooperation to emerge, each government entity needs to more fully understand their expected  
528 outcomes in order to seek common ground.

529 In some ways HSR is unique: it enables a continuity of daily lived-experience across  
530 geographic distances which are greater than those that could be integrated by the automobile or  
531 conventional rail, in effect creating social and economic relationships within discontinuous  
532 regions. This discontinuity could enable intentional preservation of the interstitial spaces  
533 between urbanized areas. Moreover, HSR can create a higher degree of interdependence between  
534 the areas it serves and thus increase the importance of local policy to the realization of regional  
535 and national objectives. In other ways, the magnitude of HSR as an environmental change simply  
536 highlights existing trends (sprawling land use patterns, increased inter-city commuting) and  
537 magnifies already relevant gaps in the Portuguese planning process: the challenges of  
538 coordinating inter-city transport with intra-city service or the inadequate connections between  
539 spatial and mobility planning.

540 To clarify goals and expected outcomes for HSR at each level of government will require  
541 further refinement of theory: What is the nature of relationships between cities within a region  
542 connected by HSR, along the spectrum from hierarchy to equality? The results of the POLYNET  
543 study state unequivocally that dominant cities still matter and have a unique role to play as  
544 gateways into the global economy (2). If that is so, what does it mean for how secondary cities  
545 like Évora, Leiria, and Coimbra establish goals for HSR or define their relationship to Lisbon?  
546 Good work exists describing the underlying causality of dispersion and clustering, including  
547 investigations into labor specialization and the fact that negative externalities (pollution,  
548 congestion) seem to be more spatially localized than positives ones (knowledge spillovers, labor  
549 pooling, etc.) (31). Further work is needed to translate these more descriptive arguments into  
550 actionable approaches for national and, in particular, local governments. Moreover, the utility of  
551 such furthered understanding would extend beyond Europe—although admittedly that has been  
552 the focus here. As Ross and Woo point out, “among the most important issues in HSR planning”  
553 for the US is “integrated cooperative governance, which is particularly significant under the  
554 fragmented political system in the U.S.” (3).

555 Successful HSR deployment demands a toolkit of policy and design aimed at extracting  
556 the most economic, social, and environmental benefit from a project, accompanied by an  
557 appropriate structure for management and intergovernmental cooperation. Such a toolkit will be  
558 derived both from fundamental theory about functional relationships and spatial organization and  
559 from a commitment to grappling with the constraints and complexity of multi-actor multi-  
560 objective governance systems. Only then will HSR become a mechanism for intentionally and  
561 positively influencing the development of our urban regions.

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566

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568 Camelo. City of Évora, January 10, 2012.

569 - Isabel Lopes, Eduardo Pires, and Daniel Ferreira. January 10, 2012.

570 - Rafael António Robalo Ribeiro de Azevedo. REFER, Lisbon. January 13, 2012.

571 - Lopes, Isabel Mendes, REFER. January 2012.

572 - José Vilela, Director; António José Cardoso, Municipal Director for the Land Use  
573 Management; Helena Terêncio, and Fernando Rebelo. City of Coimbra, January 13, 2012.574 - Dra. Sandra Cadima, head of the Planning, Management and Land Strategy Division; Maria  
575 João C.G. Neto de Vasconcelos, Técnica Superior, DPGU, DIPOET. City of Leiria, January 13,  
576 2012.

577 - Luis Santos and Ricardo Grade, SMTUC, Coimbra, November 2, 2012.

578

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