



NOISE MONITORING AND SOUNDSCAPES FOR THE DEFINITION OF QUIET AREAS IN FLORENCE CITY ACTION PLAN



Sergio Luzzi

Vie En.Ro.Se. Ingegneria – Florence (Italy)



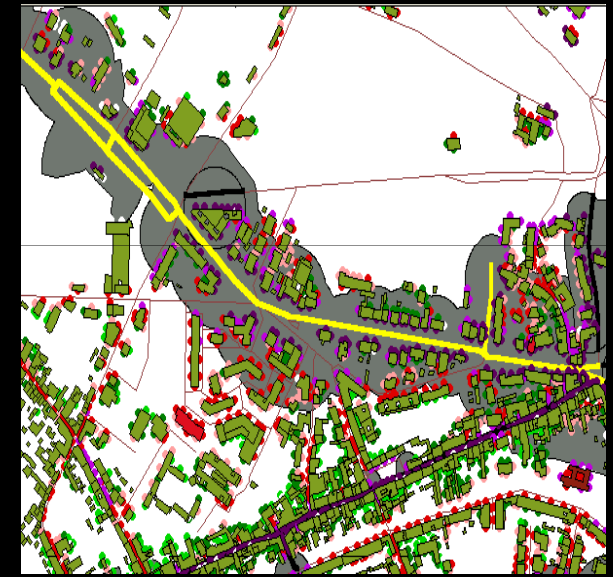
A QUIET AREA is...



“... an area delimited by the competent authority, for instance which is not exposed to a value of L_{den} , or of another appropriate noise indicator greater of a certain value set by the Member State, from any noise source”

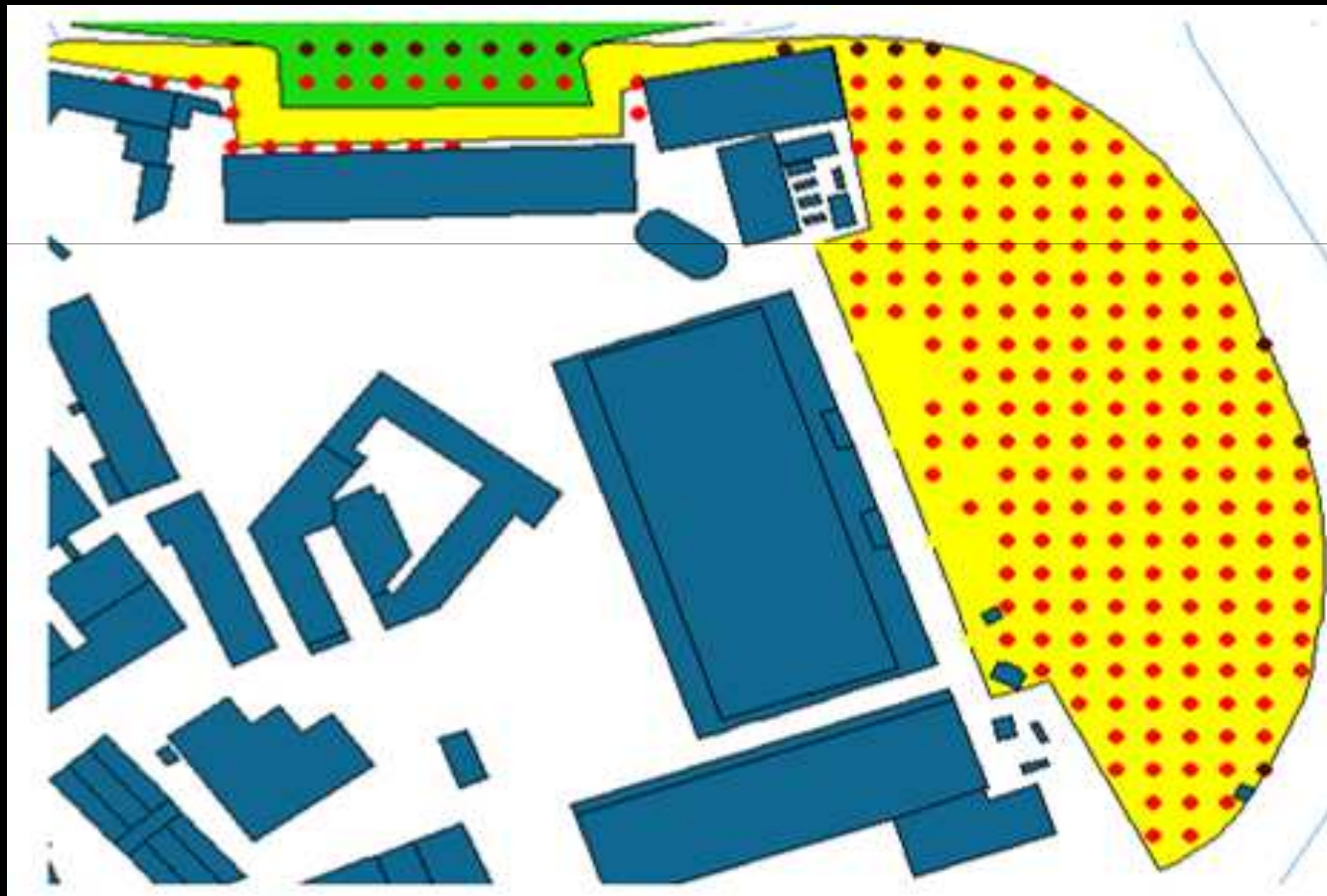


GROUPING HOTSPOTS PROCEDURE





GEOMETRICAL DEFINITION OF QUIET AREAS:
grid of points for the quantitative analysis





QUIET AREAS IN FLORENCE

ArcView GIS 3.2

1 of 935 selected

Attributes of Aree_20_05_08.shp

Shape	Objectid	Codarea	Nomearea	Tiparea	Codcivico	Quantita	Datanni	Datfine	Supmqarea	Suphaarea
Polygon	3742	02481	Parco Vegni - Area privata 1	8		1	20070901	29991231	0.000	0.000
Polygon	3743	02367	Lino Cristoforo Colombo	3	04560	2	20070901	29991231	0.000	0.000
Polygon	3744	00675	Via Alessandro D'Ancona	3	05180	2	20070901	29991231	0.000	0.000
Polygon	3746	00782	Parco dell'Albereta (giardino Ar	5	13820	3	20070901	29991231	0.000	0.000
Polygon	1069	00723	Asilo nido - Materna "Istituto In	6	1598012	N 1	20070301	29991231	3446.000	0.000
Polygon	822	00413	Vle Duca Degli Abruzzi - Vle Gi	8	05760		20070301	29991231	196.000	0.000
Polygon	3750	02046	Scuola Materna "Grifeo"	6	084408	N 3	20070901	29991231	0.000	0.000
Polygon	3751	02541	Asilo Nido "Palloncino"	6	08440	3	20070901	29991231	0.000	0.000
Polygon	3752	02542	Area di progetto "LINAR"	2	08440	3	20070901	29991231	0.000	0.000
Polygon	3753	00421	Pza Dresda	1	05745	3	20070901	29991231	0.000	0.000
Polygon	3754	02471	Via Erbosa	1	05870	3	20070901	29991231	0.000	0.000
Polygon	3757	00079	Giardino di Pza Felice Bacci	3	00940	3	20070901	29991231	0.000	0.000
Polygon	3758	02467	Giardino di Via Isonzo	3	08290	3	20070901	29991231	0.000	0.000
Polygon	726	01712	Pza Massimo D'Azeglio	3	05290	1	20070301	29991231	24479.000	2.000
Polygon	3760	02013	Via Tagliamento - Vle Benedett	8	47820	3	20070901	29991231	0.000	0.000
Polygon	3761	00758	Asilo Nido "Cafia Franci"	6	0501051	N 3	20070901	29991231	0.000	0.000
Polygon	3762	02465	Parccheggio "Kassel"	16	17150	3	20070901	29991231	0.000	0.000
Polygon	3763	01735	Scuola Elementare "Kassel"	6	18600150	N 3	20070901	29991231	0.000	0.000
Polygon	3764	00769	Scuola Materna "Kassel"	6	171507	N 3	20070901	29991231	0.000	0.000
Polygon	3765	02548	Verde generico di Vle Michelar	8	10290	3	20070901	29991231	0.000	0.000
Polygon	3766	02540	Aiuole di Via del Cavallaccio - V	1	03880	4	20070901	29991231	0.000	0.000
Polygon	3767	02539	Aiuole tra Via della Casella e Vi	1	03640	4	20070901	29991231	0.000	0.000
Polygon	342	00730	Materna - Elementare "Cairol"	6	045701	N 1	20070301	29991231	622.000	0.000
Polygon	221	00739	Istituto Tecnico "Duca d'Aosta	6	0457010	N 1	20070301	29991231	1040.000	0.000
Polygon	172	01180	Asilo Nido "Il Leone d'Oz"	6	0875046	N 1	20070301	29991231	181.000	0.000
Polygon	1078	00491	Chiosso della Facoltà di Scien	6	119807	N 1	20070301	29991231	364.000	0.000
Polygon	351	02194	Via Goffredo Della Torre	7	07717	3	20070301	29991231	3242.000	0.000
Polygon	373	01627	Materna "Marconi"	6	163304	N 5	20070301	29991231	2843.000	0.000
Polygon	374	01251	Lgo Cesare Cantu'	7	03245	5	20070301	29991231	265.000	0.000
Polygon	375	02160	Vle Giovanni Milton	7	10380	1	20070301	29991231	152.000	0.000
Polygon	376	01116	Pza L. Antonio Muratori	7	10890	5	20070301	29991231	127.000	0.000
Polygon	377	02186	Vle Filippo Strozzi	7	17080	1	20070301	29991231	615.000	0.000
Polygon	378	01285	Via Del Romito	7	14180	5	20070301	29991231	320.000	0.000
Polygon	380	02292	Via Cosseria	8	04880	5	20070301	29991231	2210.000	0.000
Polygon	381	01566	Pza Della Costituzione	3	04900	5	20070301	29991231	2402.000	0.000
Polygon	315	01607	Liceo classico "Dante"	6	1361055	N 5	20070301	29991231	2465.000	0.000
Polygon	329	01257	Via Degli Arcipressi	7	00700	4	20070301	29991231	272.000	0.000
Polygon	330	02200	Vle Pietro Nenni	7	11020	4	20070301	29991231	424.000	0.000
Polygon	382	01716	Fortezza da Basso	3	17080	1	20070301	29991231	25353.000	2.000
Polygon	383	01249	Via Giuseppe Pescetti	8	12380	5	20070301	29991231	262.000	0.000
Polygon	384	01430	Via Giuseppe Rigutini	8	14000	5	20070301	29991231	826.000	0.000
Polygon	385	01275	Via Di Caciolle	3	02800	5	20070301	29991231	294.000	0.000
Polygon	386	02387	Via Magellano (case minime)	3	09300	5	20070301	29991231	7167.000	0.000
Polygon	387	02399	Giardino di Pza Delle Medaglie	3	10045	5	20070301	29991231	11943.817	1.194
Polygon	388	00105	Rotatoria di Via Lambruschini	1	08430	5	20070301	29991231	49.899	0.005
Polygon	389	00106	Rotatoria di Piazza Gavinana	1	07030	3	20070301	29991231	135.266	0.014
Polygon	504	02049	Via Lunga (interno)	3	09020	4	20070301	29991231	10480.000	1.000
Polygon	505	01483	Vle Etruna (incrocio)	7	05885	4	20070301	29991231	1221.000	0.000
Polygon	506	01701	Materna "Clari"	6	056251	N 4	20070301	29991231	6059.000	0.000
Polygon	507	02015	Elementare "Don Milani"	6	056251	N 4	20070301	29991231	6896.000	0.000
Polygon	508	02180	Pza Carlo Dolci	7	05625	4	20070301	29991231	103.000	0.000
Polygon	509	02181	Pza Carlo Dolci	8	05625	4	20070301	29991231	151.000	0.000

ArcView GIS 3.2

1 of 861 selected

Attributes of Aree critiche-accorpate.s

Shape	Strada	Codcivico
Polygon	Via Bernardo Cennini	0400
Polygon	Piazza Adua	0015
Polygon	Via Delle Ruote	1454
Polygon	Via Bonifacio Lupi	0906
Polygon	Via Guelfa	0804
Polygon	Via San Zanobi	1610
Polygon	Via Fiume	0640
Polygon	Via Santa Reparata	1582
Polygon	Via Della Fortezza	0653
Polygon	Via Alfonso Lamarmora	0840
Polygon	Via Gustavo Modena	1046
Polygon	Piazza del Crocifisso	0504
Polygon	Pza Massimo D'Azeglio	0529
Polygon	Via Giuseppe Montanelli	1056
Polygon	Pza Dell'Indipendenza	0820
Polygon	Via Valfondi	1814
Polygon	Pza Della Stazione	1695
Polygon	Lgo Fratelli Alinari	0039
Polygon	Vle Filippo Strozzi	1708
Polygon	Via Gino Capponi	0334
Polygon	Via Del Campuccio	0312
Polygon	Via Camillo Cavour	0394
Polygon	Via De' Guicciardini	0808
Polygon	Via Toscanella	1768
Polygon	Via Dello Sprone	1691
Polygon	Via De' Velluti	1831

HOTSPOTS IN FLORENCE

ArcView GIS 3.2

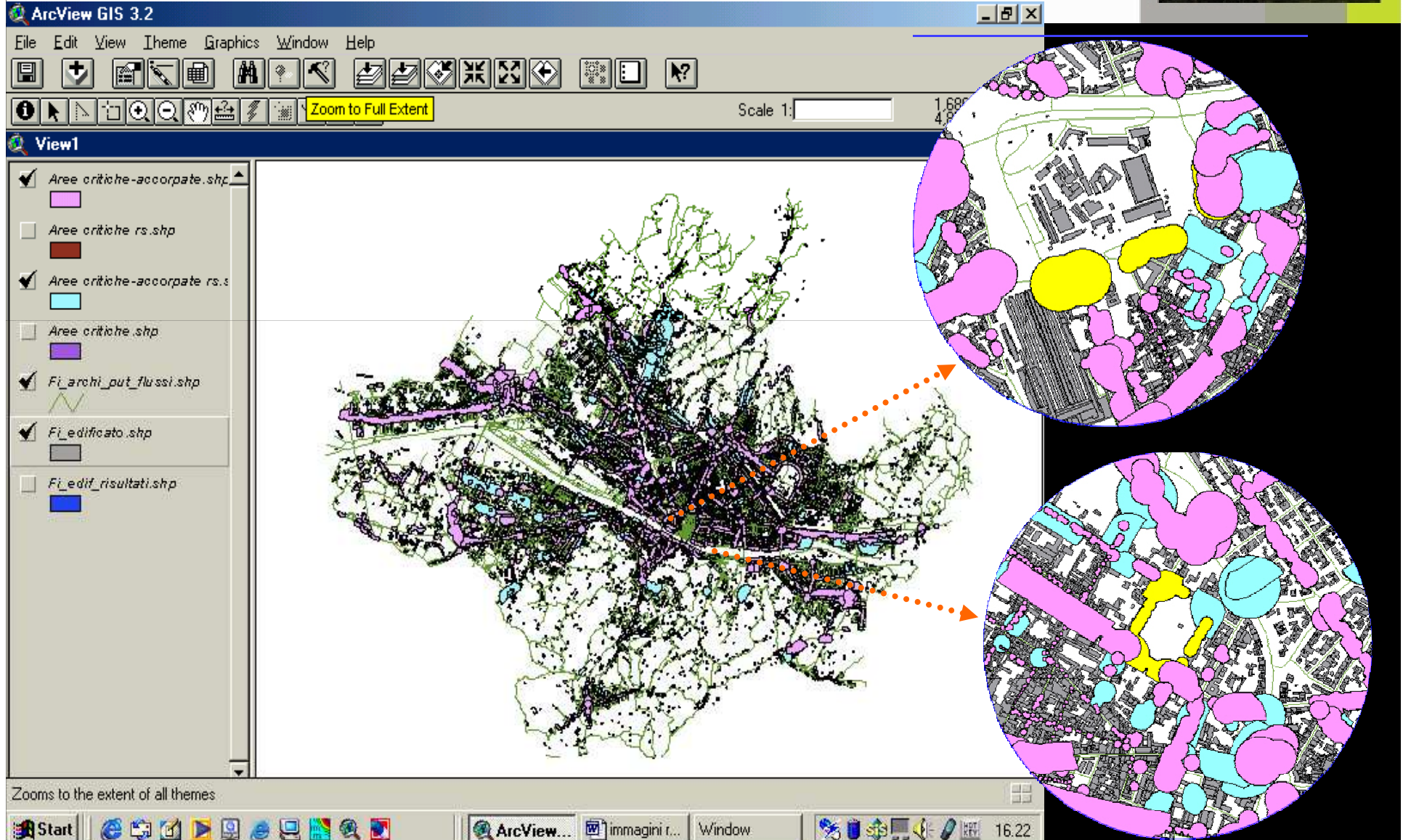
1 of 861 selected

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Shape	Strada	Codcivico
Polygon	Via Fiume	0640
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Polygon	Via Dello Sprone	1691
Polygon	Via De' Velluti	1831
Polygon	Via De' Vellutini	1832
Polygon	Piazza della Passera	1205
Polygon	Via Del Baluardo	0112
Polygon	Via Madonna Della Pace	0918
Polygon	Via Luigi S. Cherubini	0413
Polygon	Via Sant'Anna	1580



TERRITORIAL PLACEMENT





MACRO-AREAS IN FLORENCE AGGLOMERATE used to design interventions





SELECTION OF SCENARIOS

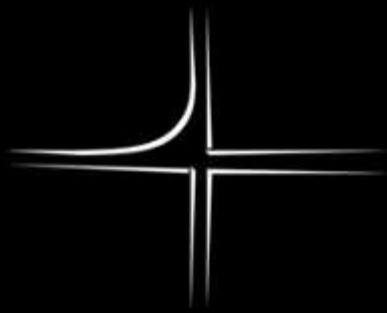
- **Urban Parks:** Parco San Donato
- **Green spaces:** Giardini della Fortezza da Basso
- **Public gardens:** Giardino dell'Orticoltura
- **Link pattern between parks:** Percorso Cascine - Renai
- **Squares and open space areas:** Piazza d'Azeglio, Piazza Tanucci, Piazza della Vittoria
- **Open spaces around schools:** Scuola Don Minzoni

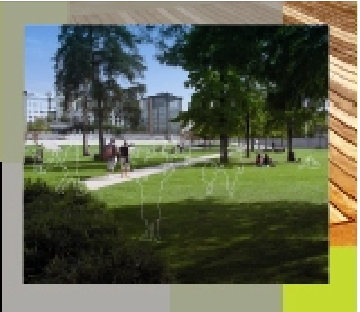




THE REDISCOVERED SQUARE "Piazza della Vittoria"

PLACEMENT OF THE SQUARE

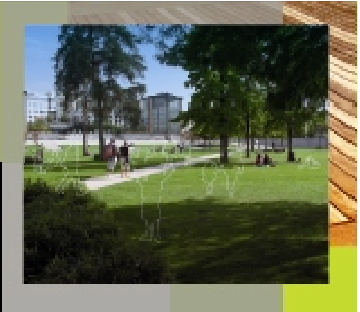




THE REDISCOVERED SQUARE "Piazza della Vittoria"

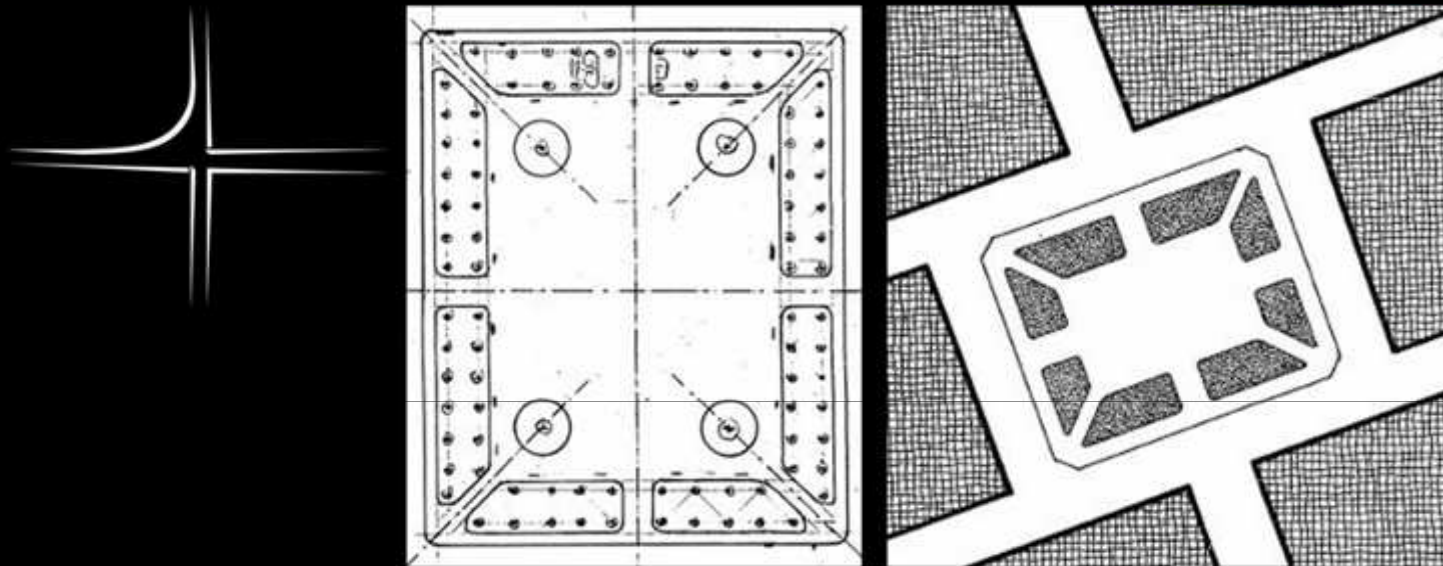
PLACEMENT OF THE SQUARE





THE REDISCOVERED SQUARE "Piazza della Vittoria"

HISTORICAL ANALYSIS



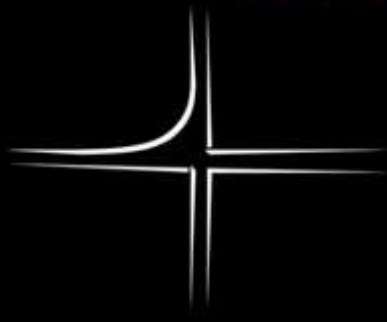
"... so the square will become a pleasant place also in summer, and the green area will make nice the new quarter of the city."

ASCFi, BA 1/81, nn. 1001-735, 26 Marzo 1929





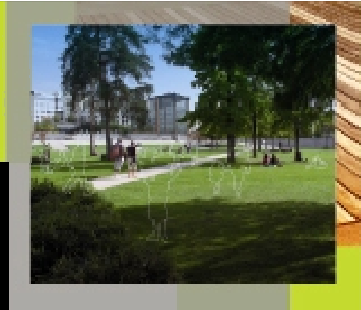
THE REDISCOVERED SQUARE "Piazza della Vittoria" PILOT STUDY – FORTEZZA GARDENS



MAPS OF PREVALENT SOURCES

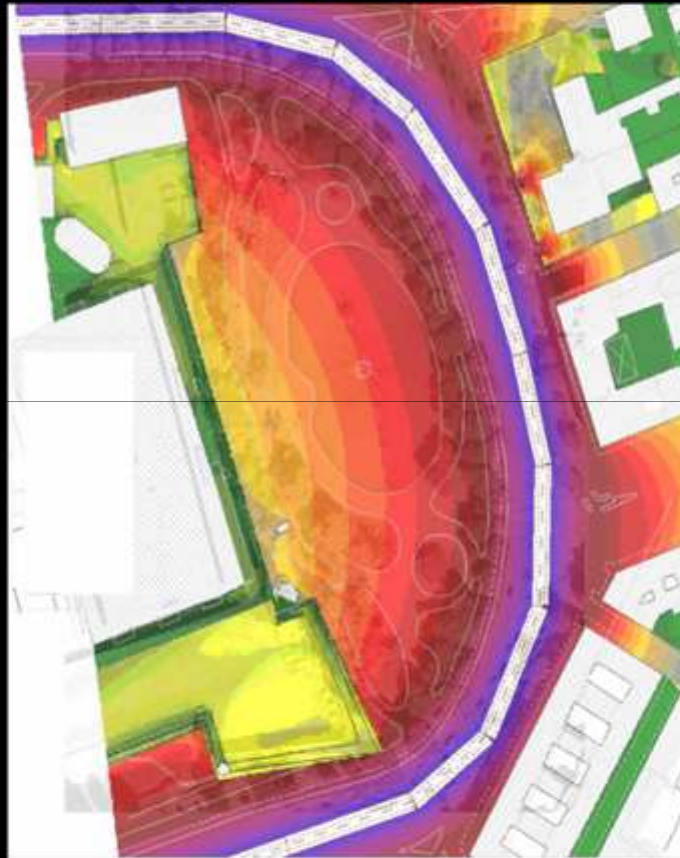
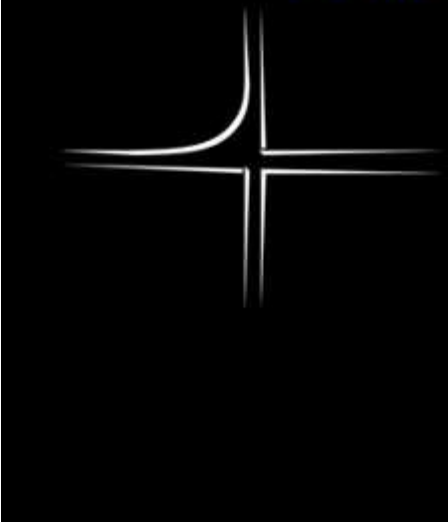
- Fountain and voices
- Traffic and voices
- Voices
- Traffic

















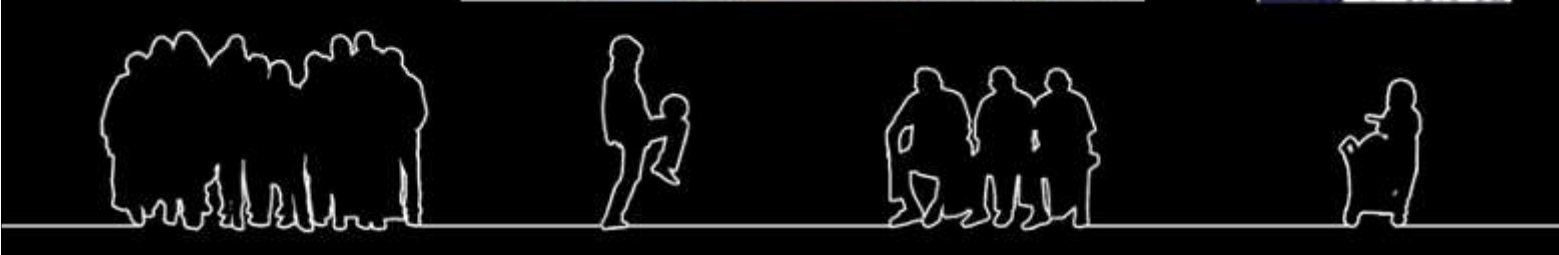
THE REDISCOVERED SQUARE "Piazza della Vittoria"

PILOT STUDY – FORTEZZA GARDENS



ACOUSTIC MAP
LAeq (day)

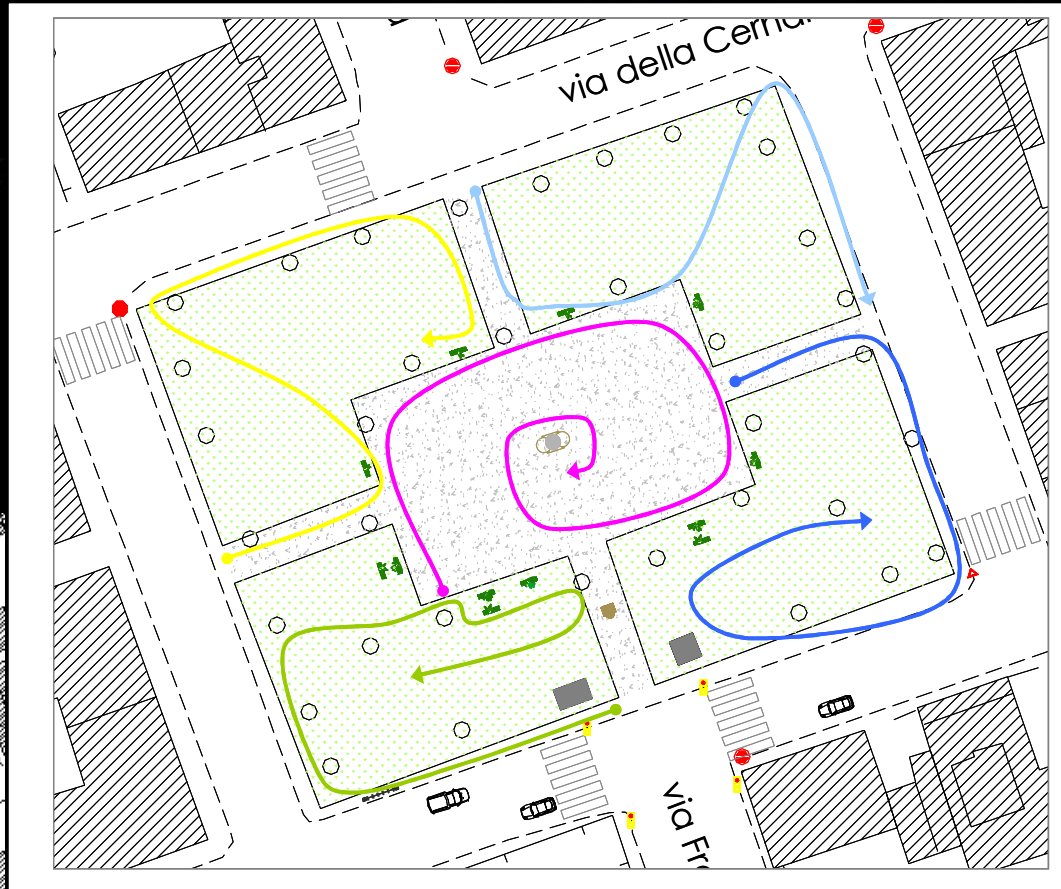
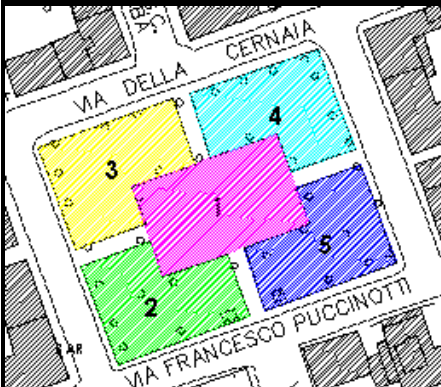
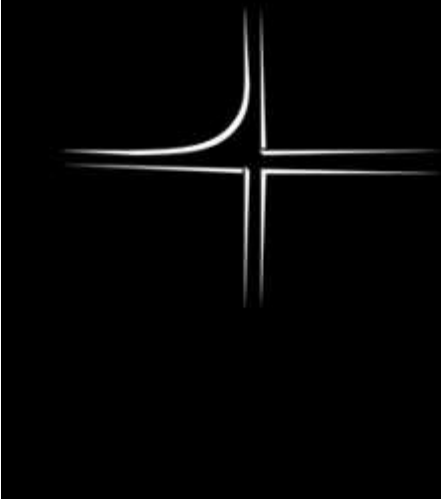
	> -99.0 dB
	> 35.0 dB
	> 40.0 dB
	> 45.0 dB
	> 50.0 dB
	> 55.0 dB
	> 60.0 dB
	> 65.0 dB
	> 70.0 dB
	> 75.0 dB
	> 80.0 dB
	> 85.0 dB





THE REDISCOVERED SQUARE "Piazza della Vittoria"

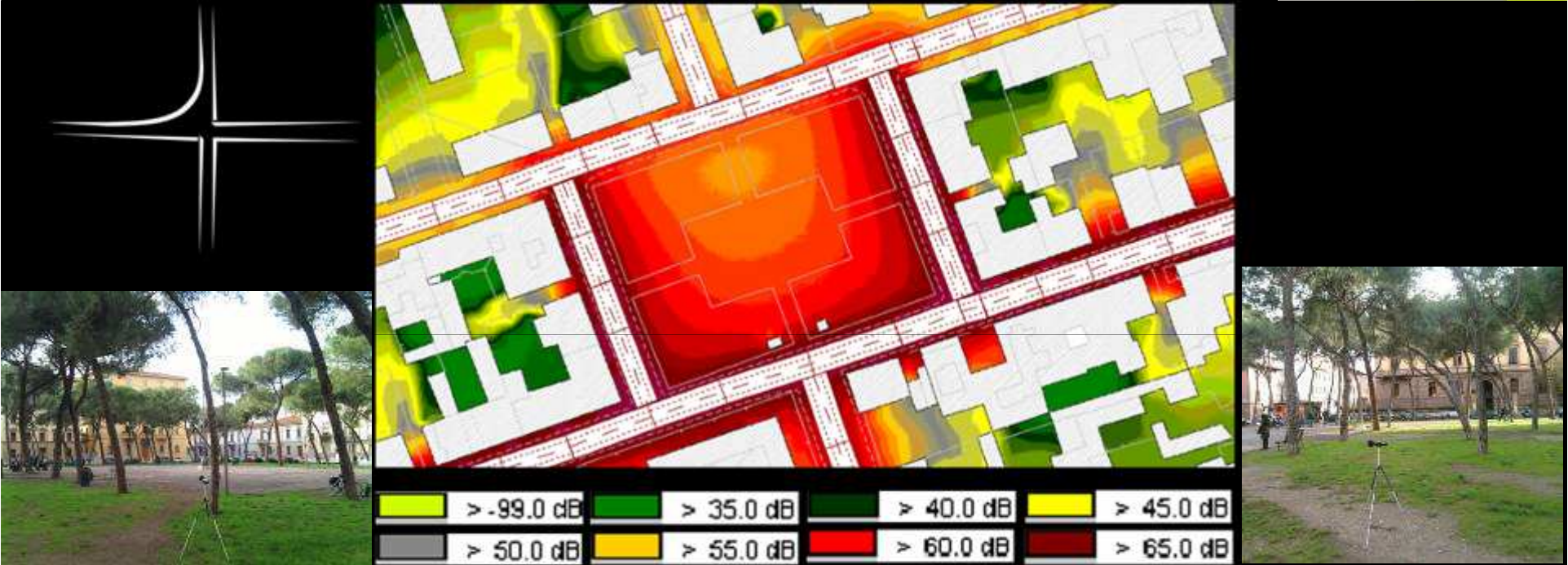
SOUNDSCAPE ANALYSIS





THE REDISCOVERED SQUARE "Piazza della Vittoria"

SOUNDSCAPE ANALYSIS



ACOUSTIC MAP: study of the noise propagation caused by the road



MAIRIE DE PARIS



Journée de réflexion
sur les « zones calmes »

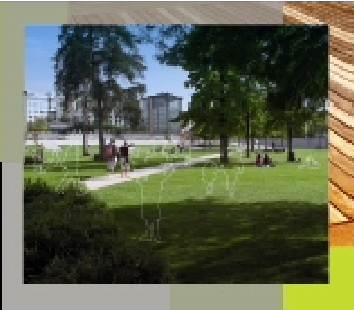


THE REDISCOVERED SQUARE "Piazza della Vittoria"

SOUNDSCAPE ANALYSIS: interviews to users of the square

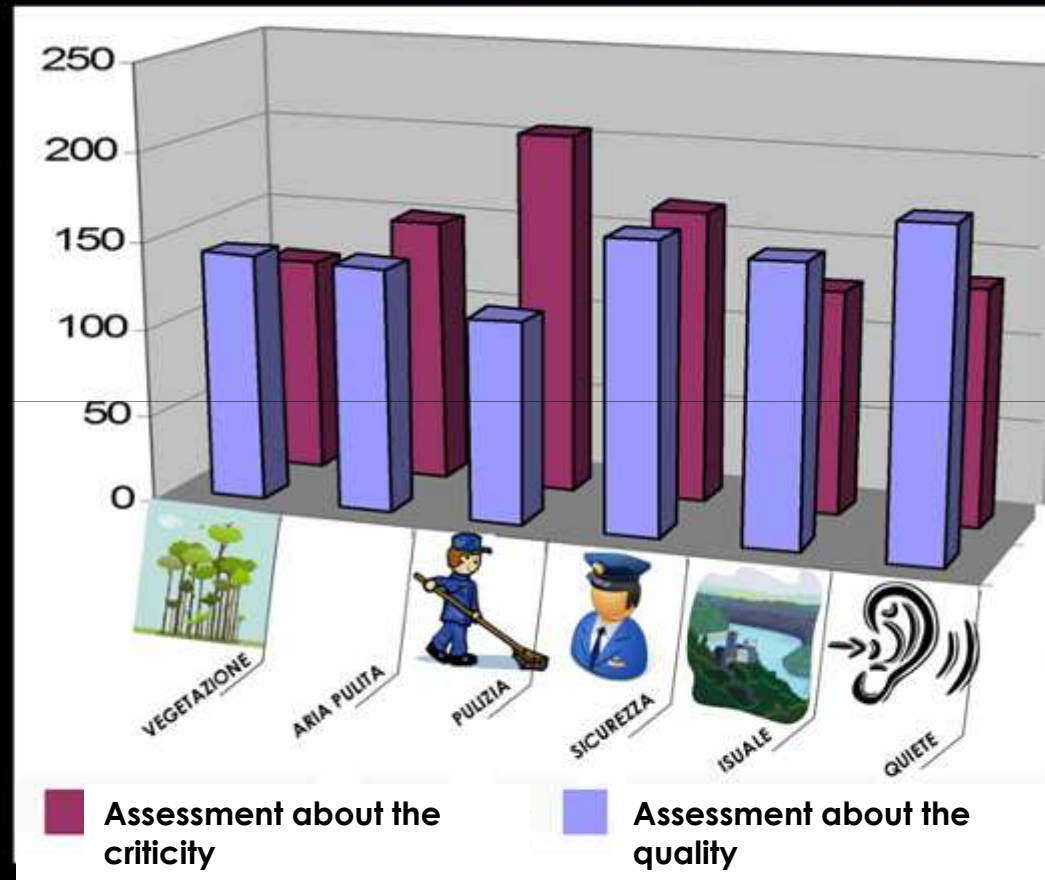


mechanic – **Sileno**, the wine merchant – **Lina**, the caretaker – **Emma's mum** – **Leone** and his babysitter **Darshi**



THE REDISCOVERED SQUARE "Piazza della Vittoria"

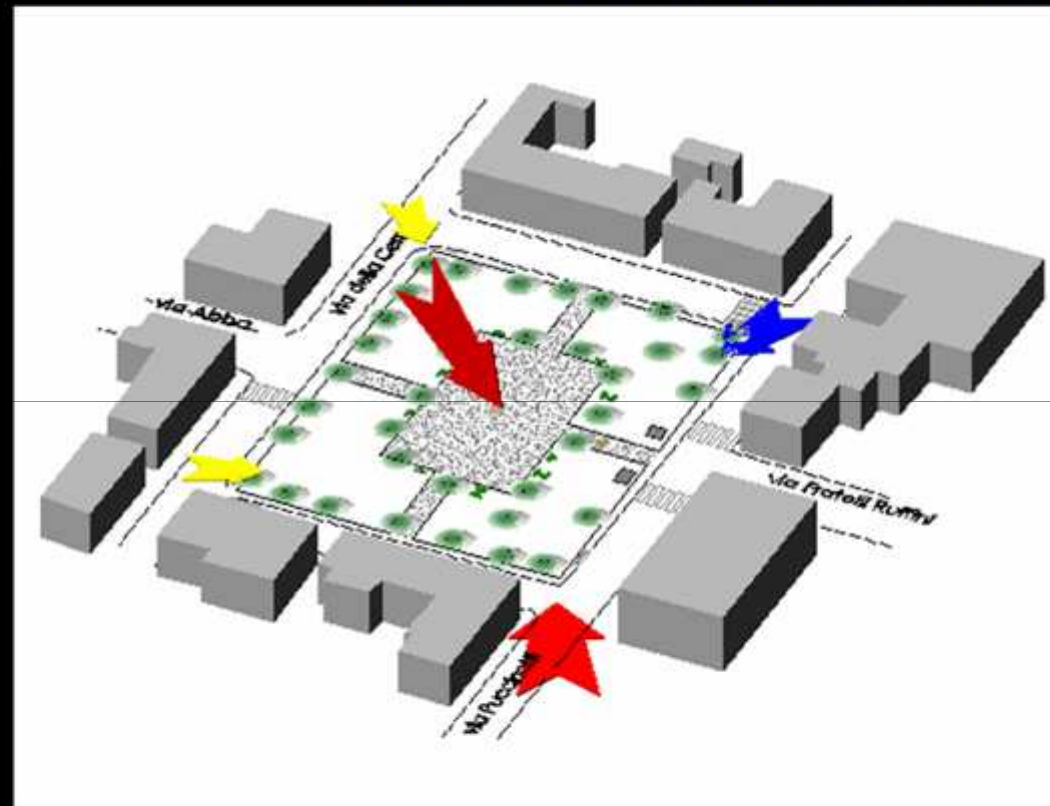
SOUNDSCAPE ANALYSIS





THE REDISCOVERED SQUARE "Piazza della Vittoria"

SOUNDSCAPE ANALYSIS



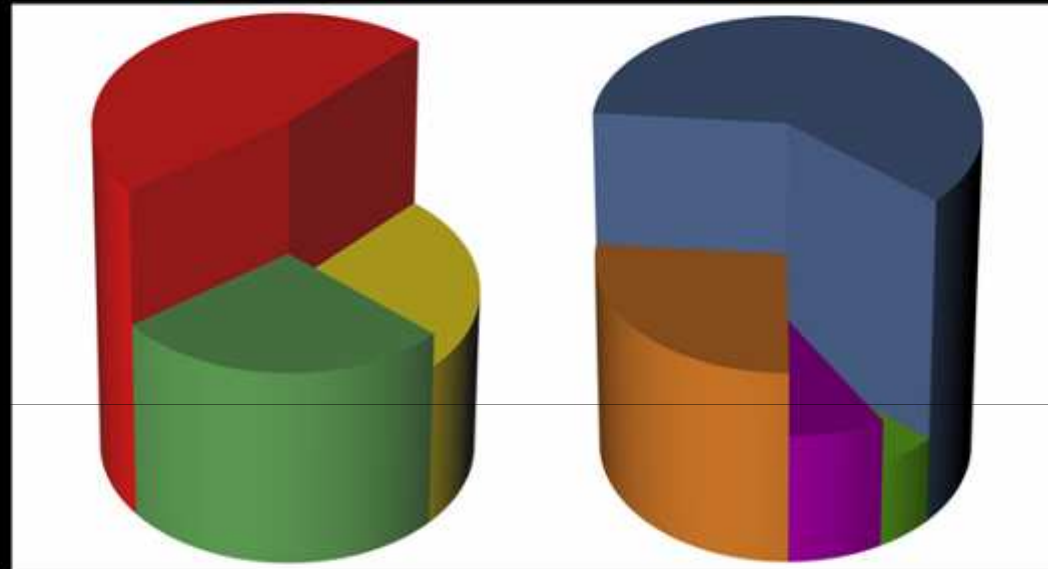
POPULARITY RATING OF THE SUB-AREAS





THE REDISCOVERED SQUARE "Piazza della Vittoria"

SOUNDSCAPE ANALYSIS



FREQUENCY OF PEOPLE IN SQUARE

POPULARITY RATING OF THE SQUARE

- Less of 1 hour
- Between 1 and 2 hours
- More than 2 hours

- 1-2
- 3-4
- 5-6
- 7





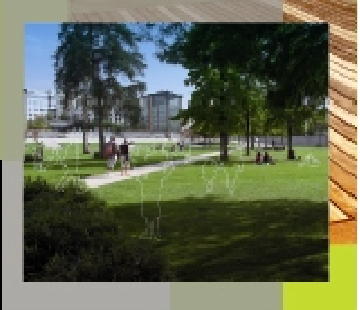
THE REDISCOVERED SQUARE "Piazza della Vittoria"

CAMPAIGN FOR LISTENING TO PEOPLE

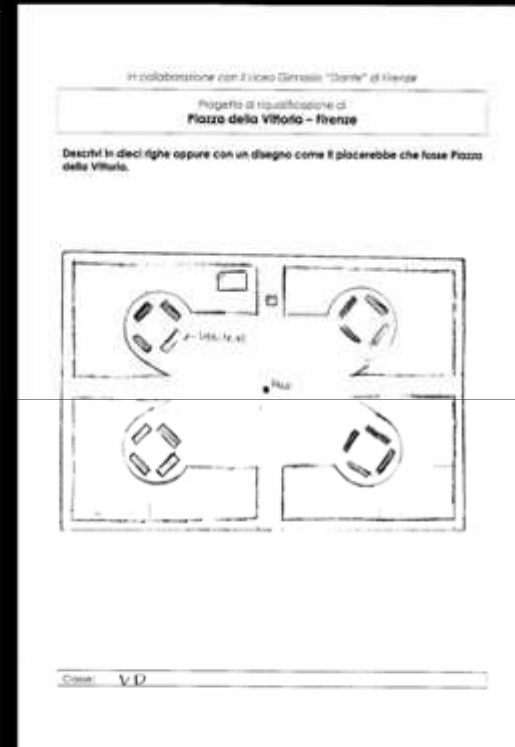
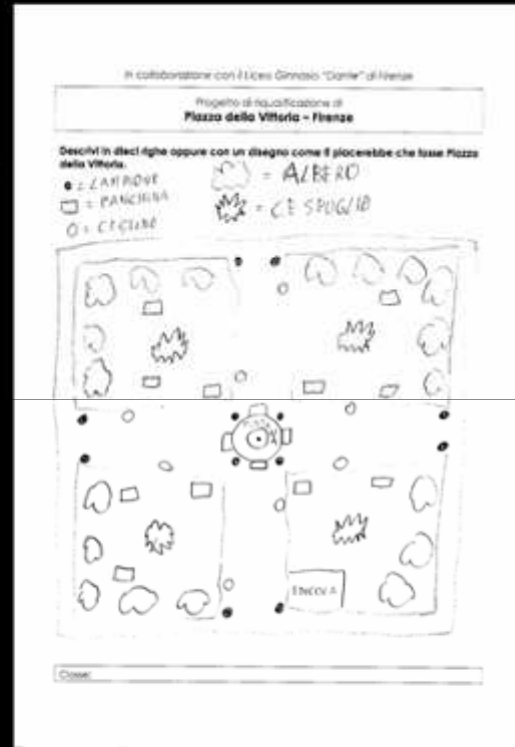
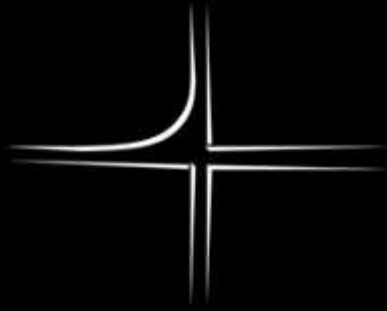


THE NEW SQUARE FOR LEONE (3 years old)



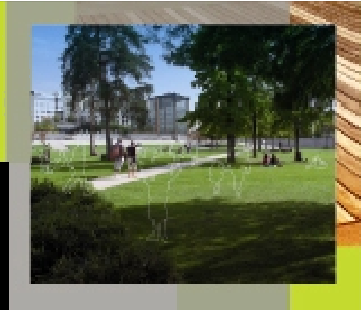


THE REDISCOVERED SQUARE “Piazza della Vittoria”
CAMPAIGN FOR LISTENING TO PEOPLE

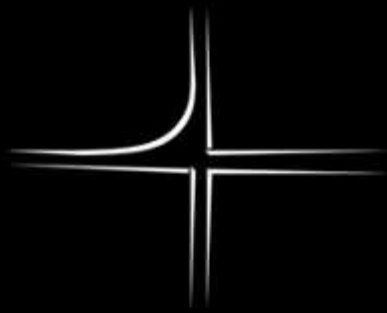


TEST PROPOSED TO STUDENTS OF LICEO GINNASIO “Dante” - FIRENZE





THE REDISCOVERED SQUARE "Piazza della Vittoria"
CAMPAIGN FOR LISTENING TO PEOPLE



In collaborazione con il Liceo Ginnasio "Dante" di Firenze

Progetto di riqualificazione di
Piazza della Vittoria - Firenze

Descrivi in dieci righe oppure con un disegno come ti piacerebbe che fosse Piazza della Vittoria.

- 1) NON UTILIZZATA COME PIAZZA
- 2) CON MIEGIA IN VECE DELL'ASFALTO PER RINCHIUSI LA PAVESSE FISICA
- 3) SENZA FEE CI CANINE
- 4) CON QUALCUNO CHE PUNZONI
- 5) CON TRE FONTANE CHE FANNO ACQUA FREDDA
- 6) CON TRE ALBERI MIGNOTTI

Cognome: TRA

In collaborazione con il Liceo Ginnasio "Dante" di Firenze

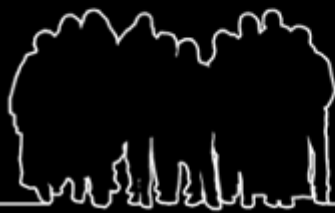
Progetto di riqualificazione di
Piazza della Vittoria - Firenze

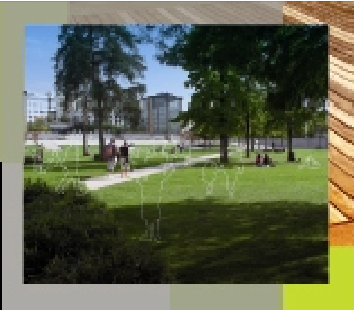
Descrivi in dieci righe oppure con un disegno come ti piacerebbe che fosse Piazza della Vittoria.

Secondo me la piazza è abbastanza grande, ma non che fosse più pulita l'ambiente in generale. E non abbastanza alberi. Tra il domotico sono più persone e non molto altri qualche tavolo.

Cognome: V* D.

TEST PROPOSED TO STUDENTS OF LICEO GINNASIO "Dante" - FIRENZE





THE REDISCOVERED SQUARE "Piazza della Vittoria"

IDEAS FOR "PIAZZA DELLA VITTORIA"

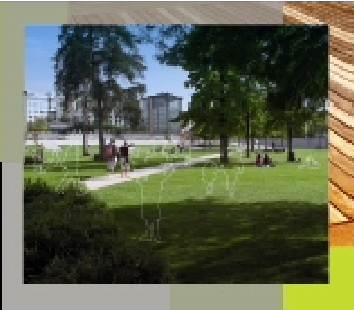




THE REDISCOVERED SQUARE "Piazza della Vittoria"

IDEAS FOR "PIAZZA DELLA VITTORIA"





THE REDISCOVERED SQUARE "Piazza della Vittoria"

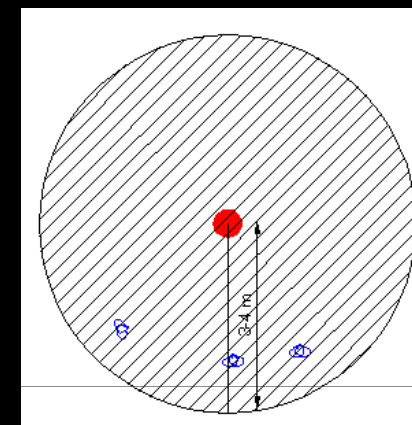
THE SQUARE FOR... "DANTE"





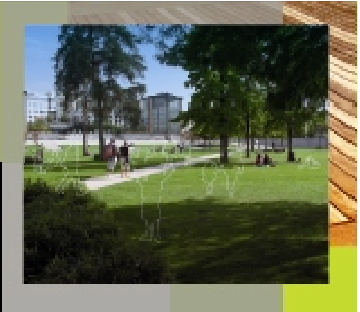
THE REDISCOVERED SQUARE "Piazza della Vittoria"

SONOUROUS INSTALLATION: SPHERA



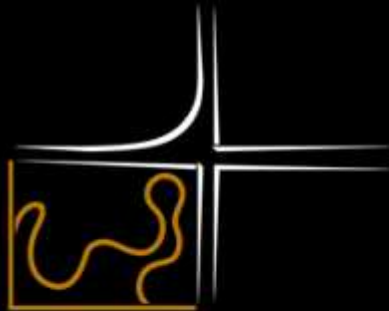
full range

360°



THE REDISCOVERED SQUARE "Piazza della Vittoria"

SONOUROUS INSTALLATION: SPHERA

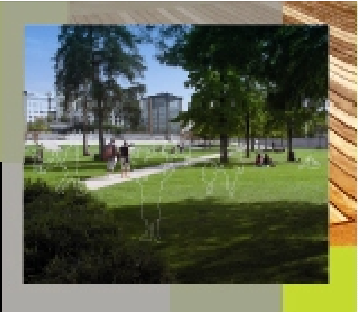




THE REDISCOVERED SQUARE "Piazza della Vittoria"

THE SQUARE FOR... "DANTE"





THE REDISCOVERED SQUARE "Piazza della Vittoria"

THE SQUARE FOR... CHILDREN



THE REDISCOVERED SQUARE "Piazza della Vittoria"

SONOUROUS INSTALLATION: BIG - YOYO





THE REDISCOVERED SQUARE "Piazza della Vittoria"

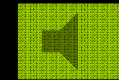
SONOUROUS INSTALLATION: BIG - YOYO





THE REDISCOVERED SQUARE "Piazza della Vittoria"

THE SQUARE FOR... CHILDREN

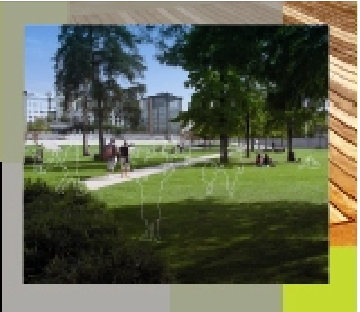




THE REDISCOVERED SQUARE "Piazza della Vittoria"

THE SQUARE FOR... CHILDREN





THE REDISCOVERED SQUARE "Piazza della Vittoria"

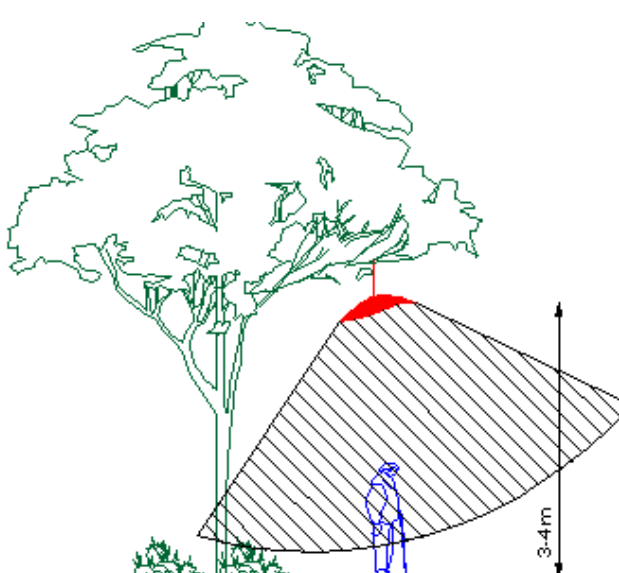
THE SQUARE FOR... SOUND AND RELAX





TERRACOTTA SONIC LEAF

TECH SPECS	PECULIAR SPECS	DIMENSIONS	AVAILABLE COLORS
1 way satellite floor standing sound module narrow/medium angular coverage with low SPL capabilities	Asymmetric angular coverage, frontal impact	Dimensions 1,35m h	Terracotta traditional colour



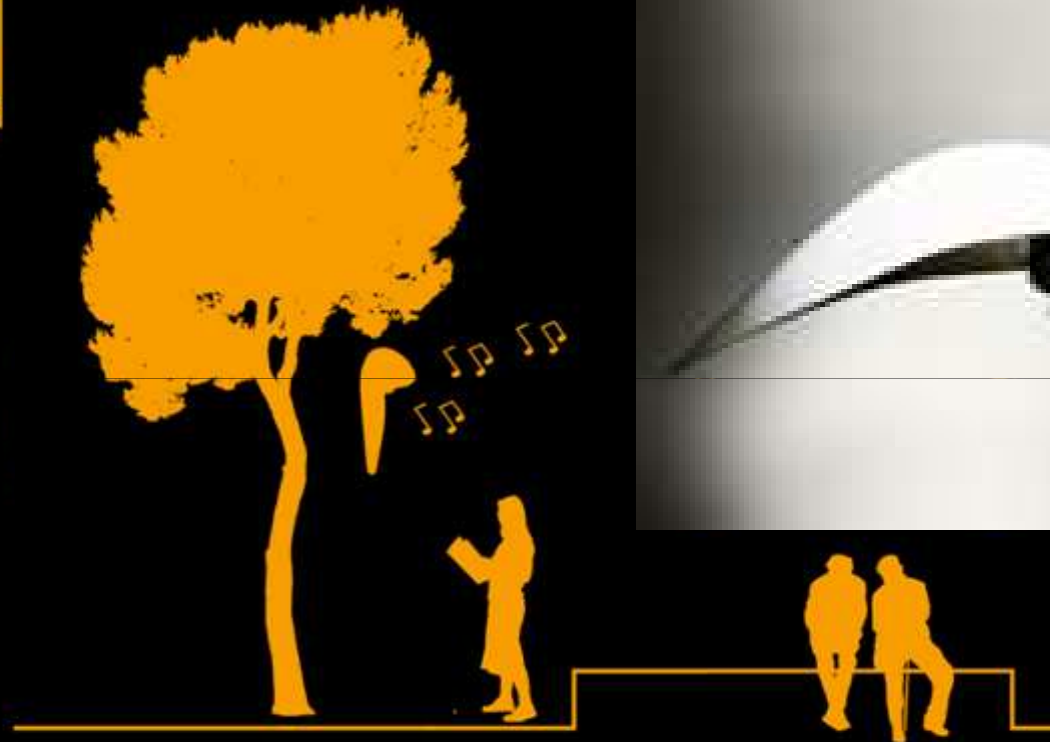
100hz - 20khz
Variabe Emission angle

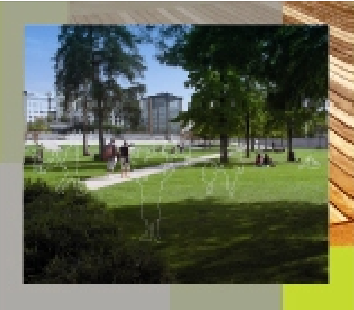




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SONOROUS INSTALLATION: DOLPHIN

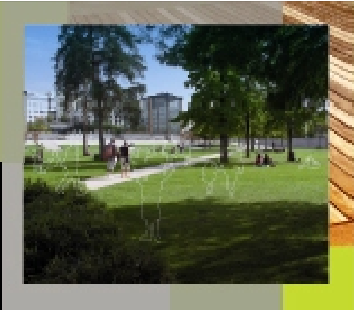




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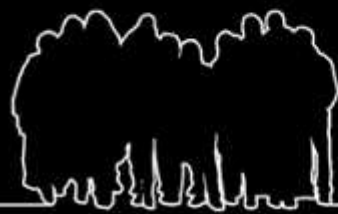
THE SQUARE FOR... SOUND AND RELAX





THE REDISCOVERED SQUARE "Piazza della Vittoria"

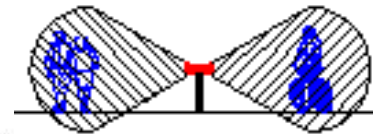
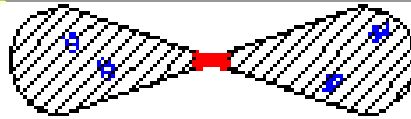
THE SQUARE FOR... PLAYING



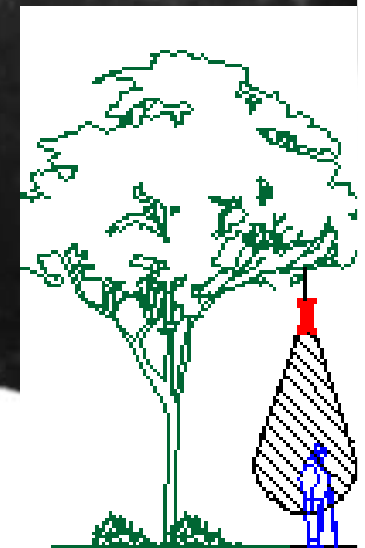
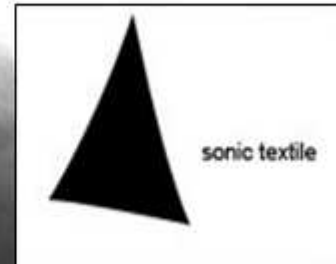
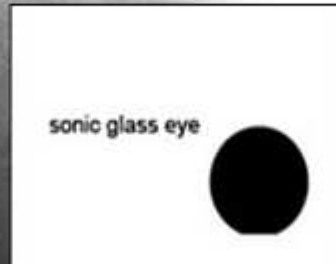
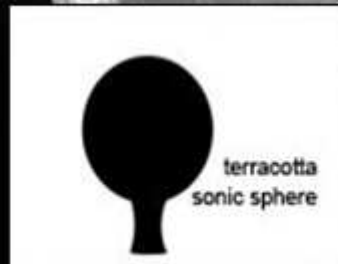


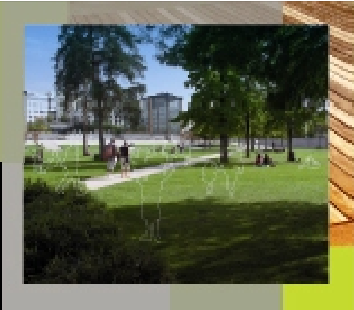
full range

20°



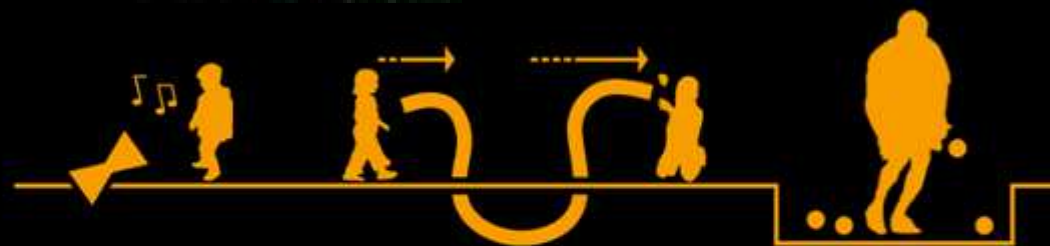
Omnidirectional Sound Modules The richness of their tones is resembling that of a natural sound source due to the omnidirectional sound emission and the smooth and regular increase of sound pressure level as one approaches the module.

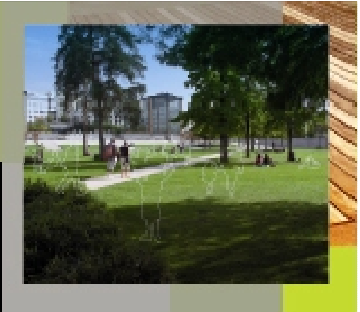




THE REDISCOVERED SQUARE "Piazza della Vittoria"

SONOROUS INSTALLATION: SMALL YO-YO

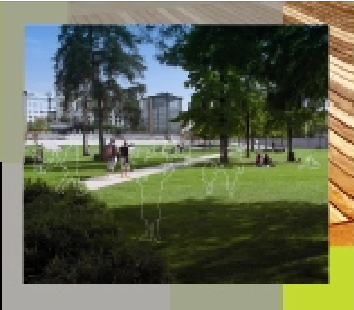




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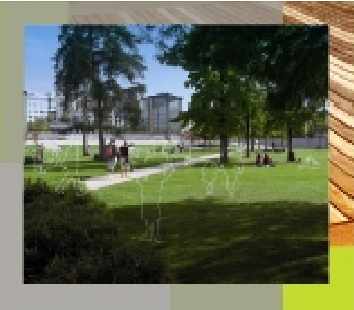
THE SQUARE FOR... SOUND AND RELAX





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THE SQUARE FOR... PLAYING





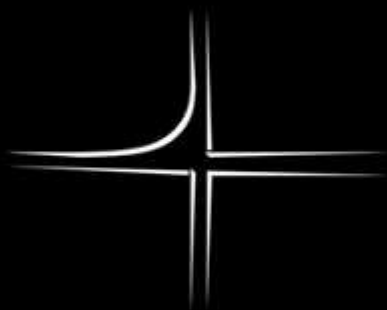
THE REDISCOVERED SQUARE "Piazza della Vittoria"

THE SQUARE FOR... PLAYING





THE REDISCOVERED SQUARE "Piazza della Vittoria"



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Responsabili dello studio

Arch. Beatrice Gentili,
Ing. Sergio Luzzi,

Gruppo di lavoro

Arch. Luca Barontini - campagna di ascolto e elaborazioni grafiche
Arch. Rossella Natale - analisi del paesaggio sonoro
Dott. Lorenzo Brusci - composizioni sonore
Arch. Stefano Maffei - elaborazione video

Si ringraziano

Il Preside del Liceo Dante Prof. Elio Bruno
La Prof.ssa Viviana Viviani
I Ragazzi del Liceo Dante

e tutti gli intervenuti, tra i quali ricordiamo:

Daniele, il Fioraio - Marcello, il Barista - Roberto e Cinzia, i Mesticatori -
Francesca, la Giornalaia - Marco, il Meccanico - Sileno, il Vinaio -
Lina, la Portinaia - La Mamma di Emma - Leone e la Babysitter Darshi

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www.vienrose.it

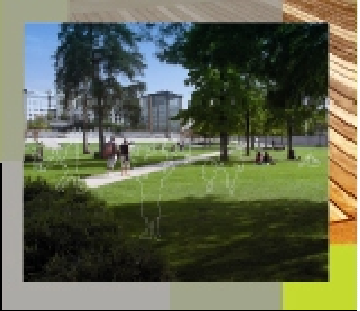
www.architetturasonora.com



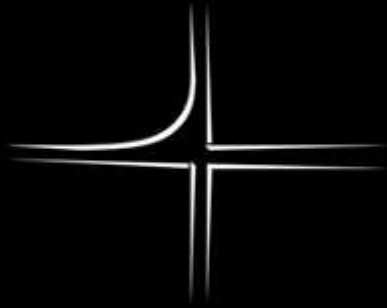
MAIRIE DE PARIS



Journée de réflexion
sur les « zones calmes »



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Thanks for your attention

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