Abstract
Questo contributo, attraverso alcune esperienze didattiche condotte nella Scuola di Architettura di Pescara, propone una riflessione su tre ‘ragioni’ emergenti che confermano la centralità degli insegnamenti tecnologici nei percorsi di formazione dei futuri architetti. La ragione relazionale, la ragione di processo e la ragione performativa possono contribuire nella definizione di orizzonti multi/inter/trans-disciplinari della didattica, sempre più necessari per affrontare le complessità del l’abitare; sia per rapportarsi con la domanda di nuove competenze, proveniente dal mercato del lavoro, sia per sviluppare capacità di progetto su più livelli e molteplici scale e temporalità d’intervento.

This contribution, by looking at several experiences from the School of Architecture of Pescara, proposes some reflections regarding three emergent reasons that confirm how important it is that the training of future architects contain technological subjects. The relational reason, the reason of the processes and the performance reason can contribute in defining the multi-inter/trans-disciplinary horizons of didactics, which are becoming more and more necessary when tackling the complexities of the habitat; both to bring it in line with the working market’s demand for new competences and to develop abilities to relate on more than one level and in multiple scales and temporal interventions.

Keywords
technologia dell’architettura, progettazione tecnologico-ambientale, cultura tecnologica del progetto, ambiente costruito.
technology of architecture, technological-environmental design, technological culture of design, built environment.

Filippo Angelucci*
Le ragioni tecnologiche del progetto: tre livelli esperienziali possibili – Le sfide individuate evidenziano alcuni scenari emergenti che invogliano per l’innovazione della didattica del progetto e rispettano ai quali le discipline tecnologiche possono e dovranno dare risposte. Da un lato emerge la necessità di guardare al progetto come un’esigenza complessa entro cui saperi, bisogni, azioni si integrano in una trama di relazioni induttive/deduttive che possono rendere sostenibili (attuabili) le proposte progettuali. Occorre quindi una didattica tecnologico-ambientale che possa farsi interprete delle molteplicità degli habitat antropico, come interdisciplina per governare conoscenze e pratiche gestionali, economiche, legislative, tecniche, disciplinari consolidate fino a oggi, con le più recenti normative, legislative, tecniche (Cynoweth, 2009) assumendo un ruolo ‘prassiologico per la progettazione’ (Maldonado, 1970). Al contempo, è però necessario che le dinamiche di progetto entro a far parte di una concezione sistemica dell’architettura, delle città e del territorio, in termini di ambiente costruito, inteso come ‘a range of practice-oriented subjects concerned with the design, development and management of buildings, spaces and places’ (Griffith, 2004). In questo secondo scenario, le discipline tecnologiche possono contribuire nel governare le oscillazioni tra prassi adattative e atteggiamenti inventivi, ricercando una ‘teoria della prassi’ per generare circuiti progettuali virtuosi fra dati di partenza, conoscenze tecniche e azioni costruttive (Emmitt, 2012).

Rispetto a questa duplice natura della didattica tecnologica, possono collocarsi alcune esigenze condotte presso la Scuola di Architettura di Pescara1. Si tratta di esperienze basate sulle logiche del serious gaming, per avvicinarsi e integrare le pratiche didattico-conoscenti (teorico-deduttive) consolidate fino a oggi, con le più recenti modalità di apprendimento e studio collaborativo (digitali-sintetiche). La pratica del gioco serio, attraverso un’alternanza di controlli e inferenze (Gillies, 1998) e un ragionamento fondato su modelli, scenari, conoscenze e comprensione sistematica, favorisce le condizioni per prendere decisioni progettuali e definire alternative (Kristiansen and Rasmussen, 2014).

Da tale percorso, sono emerge almeno tre ragioni tecnologiche corrispondenti a possibili livelli esperienziali del progettare: relazionale, di processo e performativo. Entro questi tre livelli può compiersi il passaggio progressivo dall’acquisizione delle conoscenze di cultura tecnologica del progetto, allo sviluppo di abilità tecnologiche per governare il processo progettuale, alla maturazione di competenze per la progettazione tecnologico-ambientale.

La ragione tecnologica relazionale: saper ricostituire storie – La prima ragione, relazionale, riguarda il passaggio dal progetto di entità chiuse/oggettuali verso una concezione connettiva del’arte-fatto. Prima di progettare, è necessario ricostituire relazioni tra architettura, paesaggio e uso di risorse/tecniche nei processi di cambiamento delle attività abitative, passando da una tecnologia dell’architettura verso una ‘tecnologia dell’abitat’ (Vittoria, 1975). Tale approccio parte dalla necessità di delineare ‘spazi alternativi di relazione’ entro i quali convogliare i processi di apprendimento attraverso un’incubazione condivisa delle conoscenze. Si tratta di ricondurre l’abitare, ancor prima che il progettare, da un generico ‘stare davanti al mondo’ come osservatori, a una condizione più bilanciata dello ‘stare nel mondo’, come interpreti attenti agli interventi antropici e all’impiego delle risorse che essi comportano (Capra, 1997). Ricostituire storie, individualmente, con elaborazioni scritte-grafiche, rilievi, campionature, riferite a elementi chimici o costruttivi, permette di riannodare la materia del costruito e le forme che ne conseguono a luoghi fisici, naturali e culturali di provenienza o destinazione. Ogni materiale o prodotto portato con sé un’eredità di idee, lavorazioni, trasformazioni, impatti (Aldersey-Williams, 2011). Anche ogni elemento costruttivo (struttura, chiusura, partizione, ecc.) è espressione di culture tecnicamente-culturali locali e al contempo dipendenti da dinamiche globalizzate.

Attraverso la condivisione di conoscenze su materiali/elementi ed esperienze progettuali in gruppo, l’approccio relazionale permette di ricollegare le parti al tutto, ma far maturare anche una consapevole responsabilità sociale/intellettuale del progettista nei processi di trasformazione ambientale (Figg. 1-3). Saper collocare in modo pertinente aspetti specialistici nel quadro generale dell’abitare è capacità fondamentale per governare l’uso di tecniche sempre più settorializzate. In particolare, permette di sviluppare competenze che riguardano: la provenienza e l’uso delle risorse nelle trasformazioni dell’habitat (life cycle thinking); la analisi di problemi ricorrenti in diverse aree geografico-culturali (problem setting); le relazioni forti/debol li tra forma e funzioni nel costruire; la reiterazione di errori costruttivi (imparare dagli errori); le variazioni espressive degli artefatti a partire dalle risorse disponibili.

La ragione tecnologica di processo: saper modelizzare le realtà – La seconda ragione, di processo, riguarda l’uso di tecnologie informative, strumentali e gestionali nell’iter di ideazione e costruzione del sistema abitativo/abitabile. Entro tale visione si definiscono le condizioni del progettare non in senso unidirezionale, formalistico-tecnico (il progetto come fine), ma integrando aspetti immateriali/organizzativi del processo costruttivo e figurativi, per accoppiare materiali dell’arte-fatto (il progetto come mezzo esplorativo). La ragione di processo riorienta la didattica del progetto in senso non chiuso e deterministico, ma aperto ed esperienziale; tende quindi a sviluppare capacità di controllo delle variabili tecnologiche, antropologiche e topologiche del processo che conduce dall’idea progettuale alla sua fattibilità. L’esperienza progettuale è condotta per progressive costruzioni di modelli, a supporto di attività di scenarizzazione, simulazione, sperimentazione, contestualizzazione. La costruzione di un modello è infatti sempre legata alla capacità di leggere e interpretare la realtà e proiettarne/prevederne le possibilità di cambiamento, evoluzione, metamorfosi conservative o trasformative (Tagliagambe, 1998).

La progettazione per modelli può svilupparsi con tecniche manuali (plastici, mockup, maquettes), informazionali (multimediali, diagrammi, organigrammi), informatiche (algoritmi, 3d, interattive). Saper progettare, secondo la ragione di processo, vuol dire allora saper costruire modelli delle realtà riguardanti il sistema abitativo/costruttivo: comportamentali/esigenziali, funzionali, topologici, strutturali, di aggregazione, economici, gestionali, energetici, tecnico-costruttivi (Figg. 4-6). Questa capacità comporta l’acquisizione di competenze che permettono di: passare dalla contestualizzazione del desiderabile alla proiezione di prevedibilità delle ipotesi progettuali (meta-dizgni); analizzare i fattori di contesto locali e ricercherne mezzi e risorse appropriate per il progetto; individuare le soluzioni alternative ai problemi dell’abitare (problem solving); definire condizioni e requisiti per garantire la qualità integrata degli interventi (performance based design); controllare le correlazioni tra spazio (sistema ambientale), componenti fisiche (sistema tecnologico) e variazibili di contesto e governarle le ricadute funzionali, formali e tecniche (fattibilità, valutazioni).

La ragione tecnologica performativa: saper lavorare per interfacce – La terza ragione, performativa, inverte la visione diffusa delle tecniche al servizio del progetto per il mero insegnamento della forma. Tende invece a orientare le innovazioni indotte dall’agire progettuale verso la rigenerazione dei sistemi costituenti l’ambiente costruito, il recupero dei processi naturali fisico-biologici, la riattivazione di ciclicità e funzionalità ecosistemiche (Tucci, 2017). La ragione performativa, attraverso innovazioni tecnologiche appropriate, accettabili o anche devianti, contribuisce a ripristinare quel quadro di equilibri adattivi tra dati di contesto, spazi, tempi, dipendenze e circuiti (Spadolini, 1988), oggi sempre più necessario per progettare a fronte delle crisi sistemiche ambientali, finanziarie e sociali. Il progetto si confronta, in modo aperto, con il quadro variabile di esigenze, risorse disponibili, vincoli e condizionamenti. In questo senso, non si limita a valutare prestazioni tecniche, ma indaga la capacità dell’organismo abitativo di assumere il ruolo di sistema complesso d’interfacce.

Fig. 1 – Knowing how to re-construct stories: Stories of chemical elements (2018).

Fig. 2 – Knowing how to re-construct stories: Stories of building elements (2014).
cia tecnologico-ambientale ‘abilitante’ che possa operare su più scale d’intervento e con diverse forme di coinvolgimento/partecipazione (Ratti, 2014; Manzini, 2015).

Progettare per interfacce (strutturali, strutturali, energetiche, comunicative, infrastrutturali), comporta ragionare su dimensioni concettuali e pragmatiche per ricercare soluzioni non codificate o codificabili. Questo permette di agire, dentro il progetto, misurandone spazi, pesi, interazioni, esternalità, in termini di ‘opera’ (entità che opera attivamente in termini sociali, culturali, ecologici, economici) (Figg. 7-10). Le competenze acquisiti vanno oltre le capacità dell’architetto tradizionale, mettendo in gioco abilità esperte (Friedman, 2015) per agire su più ambiti del processo progettuale riguardanti: le interrelazioni tra sviluppo, contesto e risorse locali (building management); le interazioni tra elementi naturali, processi metabolici, dinamiche funzionali/abitative dello spazio (certificazioni, profili di valutazione volontaria); le attività di supporto ai processi costruttivi per l’adattabilità e la sicurezza rispetto a fattori endogeni/esogeni (evidence based design/user centered design); la definizione strategica, tattica e operativa di modalità d’intervento che possano agire per la sostenibilità, l’inclusione, l’healthiness di edifici, città e territori (environmental design).

Riflessioni conclusive – L’obiettivo prevalente della didattica nelle scuole di Architettura deve essere rivolto a trasmettere non solo il piacere del fare progetto, ma anche gli aspetti esperienziali del ‘fare architettura’, in una sintesi tra modi, mezzi e forme per renderla concreta. La didattica tecnologica del progetto dovrà di conseguenza tendere al superamento degli approfondimenti puramente tecnici o specialistici del costruire e assumere un ruolo connettivo e di mediazione tra le varie dimensioni (livelli, tempi, attori, scale) del processo progettuale e costruttivo (Gialloccosta, 2006).

Nel quadro universitario italiano, ad alimentare dubbi e preoccupazioni, ma in realtà proiettare anche interessanti orizzonti d’innovazione possibili, contribuiscono recenti indirizzi programmatici che si occupano direttamente o trasversalmente della didattica dell’Architettura. Solo per citarne alcuni: il conferimento ministeriale al CUN per la revisione delle classi di laurea in senso più operativo; le procedure di monitoraggio AVA della qualità della didattica universitaria per l’avvio alle attività lavorative (tirocini e placamento); non ultime, le sollecitazioni del CNA/PPC-CUIA sull’incremento del carattere progettuale/professionale della formazione dei futuri dottori in Architettura. Sono espressioni di un quadro operativo che, ben oltre gli indici punti delle direttive comunitarie, evidenziano una mutata necessità di competenze conoscitive, strategiche e operative per affrontare le complessità dell’abitare contemporaneamente e nel prossimo futuro che vanno oltre la definizione classica dell’architetto demiuergo.

Le esperienze qui riassunte hanno permesso di orientare la didattica tecnologica sul delicato passaggio dalla teoria alla pratica del progetto. Pur non potendo ancora essere supportate da una logica conclusione dei percorsi didattici direttamente esperita nelle realtà del cantiere, hanno fatto registrare interessanti avanzamenti formativi. Adottando lo spirito del ‘learning by doing’ (declinato come learning by interacting, using, sharing), hanno abilitato lo sviluppo di competenze di-strasesti fondamentali per gli studenti in varie esperienze didattiche condotte con altri settori disciplinari e a livello internazionale: workshop di ricerca-progetto, Pescara Summer School, laboratori integrati aziende/alternanza scuola-lavoro, tirocini formativi e tesi sperimentali aziendali.

In questo senso, le esperienze sperimentate a Pescara, nell’ambito degli insegnamenti a Tecnologia dell’Architettura, pur non essendo esaustive della didattica tecnologica di sede o dell’ancor più ricca e diversificata offerta formativa maturata dal settore disciplinare a livello nazionale, costituiscono una testimonianza da condividere. La didattica tecnologica per la progettazione, per le ragioni concettuali, metodologiche e applicative enunciate, ha contribuito e continuerà a occupare una posizione centrale nel percorso formativo dell’Architetto. Sia per rapportarsi con le nuove domande di formazione provenienti dal mercato del lavoro che, evidentemente, richiedono competenze multi, inter e trans-disciplinari; sia per armonizzare le capacità professionali in una figura in grado di progettare su più livelli e abilità, rispetto a molteplici scale e temporalità d’intervento.

ENGLISH
Methodological uncertainty exists not only in scientific research but also in the didactic experimentation that considers how an architectural, urban planning or territorial project is approached. Top down approaches to projects, based on the iteration of universal principles and uniform and standard codes are no longer sufficient for the needs of our constantly changing society. Though founded on methodological presuppositions that are scientific, repeatable and which can be objectively evaluated, today they suffer from excessive amounts of technicalities generated by the convergence of new immaterial conditions in planning (increasing complexity in habitat, IT mutations of the knowledge processes, the increase of interac-

Figg. 3, 4 - From the top: Knowing how to re-construct stories, stories of transformations (drawings by F. Angelucci, C. Buccella and A. Ricci, 2013); Knowing how to model reality; typological-structural models (2017).
The technological reasons of the project: three possible experience levels – The challenges identified underline the emerging scenarios to be tackled when seeking to innovate the teaching of the project, but they also point out the technological disciplines which can and must find the answers. On the one hand, we must look at the project as a complex experience within which knowledge, needs and actions integrated in a web of inductive/deductive relations that make the project’s proposals sustainable/feasible. So we need a technological-environmental didactic that allows itself to be interpreted by the multiple dimensions of anthropic habitat, interdisciplinary to govern management, economic, legislative and technical knowledge and practices (Chynoweth, 2009) taking on the role of a praxeology for projects (Maldonado, 1970). At the same time it is, however, necessary that the dynamics of the project become part of a systemic concept of architecture, city planning and territorial projects, in terms of built environment, understood as « A range of practice-oriented subjects concerned with the design, development and management of buildings, spaces and places » (Griffith, 2004). In this second scenario, the technological disciplines can...
contribute in controlling oscillations between additive praxis and inventive attitudes, searching out a theory of praxis to generate virtuous cycles in designing, between initial data, technical knowledge and the construction phase (Emitt, 2012).

Several experiences carried out at the School of Architecture of Pescara can help understand this double nature of teaching technology. These experiences were based on the logic of serious gaming to bring closer and integrate the didactic-cognitive practices (theoretic-deductive) that have established themselves over the years with the more recent ways of collaborative learning and studying (digital-synthetic). Serious gaming, by using an alternating series of controls and inferences (Gillies, 1998) and reasoning founded on models, scenarios, connections and systemic comprehension, creates the conditions for taking design decisions and defining alternatives (Kristiansen and Rasmussen, 2014). Along this route, we found at least three technological reasons corresponding to possible experience levels of designing: relational, process and performance. Passing among these three levels one can progressively acquire the knowledge of the technological culture of the project, the development of a technological ability to control the planning process as well as develop the competences for technological-environmental design.

The technological relational reason. Knowing how to re-construct stories. The first reason, relational, concerns the passage from the project as a closed/object entity toward a connective concept of the artifact. Before the project, it is necessary to reconstruct the relations among architecture, landscape and the use of resources/techniques in the processes of change of the habitation activity, moving from a technology of architecture toward a technology of the habitat (Vittoria, 1975). This approach starts from the need to delineate alternative relation spaces within which to direct the learning processes by means of a shared incubation of knowledge.

Here we have to lead the habitat, even before the design stage, from a generic looking out on the world like observers, to the more balanced condition of being in the world like interpreters careful as regards anthropic interventions and the resources they will require (Capra, 1997). The reconstruction of histories individually, with scripto-graphic elaborations, reliefs and samplings relevant to the chemical or constructive elements, allows one to tie the materials of the construction and the form stemming from these to the physical, natural and cultural places, whether source or destination. Every material or product brings with it a legacy of ideas, manufactures, transformation and impact (Aldersey-Williams, 2011). Even each building element (structure, closing, partition, etc.) is an expression of the local technical-material culture though at the same time dependent on globalized dynamics.

By encouraging the sharing of knowledge of materials/elements and planning experiences in a group, the relational approach makes it possible to reconnect the parts to the whole, while allowing the planner to mature reasoned answers to social/intellectual issues related to the transformation of the environment (Fig. 1-3). Knowing how to place specialist aspects in a habitat’s over-all framework pertinently is a fundamental ability as we seek to use increasingly fragmented techniques. In particular this allows one to develop competences such as: the source and use of resources in habitat transformation (life-cycle thinking); the analysis of recurring problems in differing geographic-cultural areas (problem setting); the strong/weak form-function relations in the construction; the reiteration of the constructive errors (learning from mistakes) and the expressive variation of the artifacts starting from available resources.

The technological reason of the process. Knowing Fig. 6 - Knowing how to model reality: user needs/environmental models (drawings by S. Rico, C. Di Biase, G. Burtini, A. Andone, A. Nap and R. Hoss, 2017).
how to model reality – The second reason, the process, concerns the use informative, instrumental and management technologies in the ideation and building processes of the habitable system. Within this vision one defines the conditions of the design process not in a unidirectional, formalistic-technical sense (the project as an end), but by integrating immaterial/organizational aspects of the building process and figurative, perceptive and material processes of the artifact (the project as an explorative means). The reason of the process redirects the didactics of the project away from closed and deterministic and toward open and experience related: thus developing a capacity to control the technological, anthropologic and topologic variables of the process that leads from the design idea to its feasibility. The design experience is carried out building progressive models, in support of the activities of scenarization, simulation, experimentation and contextualization. In fact, the construction of a model is always linked to an ability to read and interpret reality and project/foresee the possibilities for change, evolution and metamorphosis either preservative or transformative (Tagliagambe, 1998).

Designing by models can be developed through manual techniques (models, mock ups, maquettes), informational techniques (multimedia, diagrams, organismars) or IT (algorithms, 3D, interactive). Knowing how to plan according to the process means knowing how to construct models of reality relative to the building system: behavioral, functional, typological, structural, aggregation, economic, management, energetic and technical-construction (Fig. 4-6). This ability means the acquiring of skills that allow one to move from conceptualization, what is desired, to the projection of pre-feasibility of the design hypothesis (meta-design); analyze the factors of the local context and locate the appropriate means and resources for the project; identify alternative solutions to the problems of the habitat (problem solving); define the conditions and requirements to guarantee the quality of the integrated interventions (performance based design); control the correlations between space.
In the framework of the Italian University scene, recent initiatives are contributing to a fueling of doubts and worries, but in reality, they project interesting possible innovative horizons that concern the didactics of architecture both directly and transversally. To name but a few: a request to CUN by the Ministry to review the classes of degree in a more operative sense; the AVA monitoring procedure to consider how the quality of university education effects a graduate at the start of his/her work career (internship and placement); and finally, but not least, has been CNA/PPC/CUIA's request that there be an enhancement in the character of the design/professional training of future graduates in Architecture. These are expressions of an operative framework that, going well beyond the II points of the Community Directives, underline a changed need of cognitive, strategic and operative competences to tackle the complexities of the contemporary and near future habitat that challenge the classical definition of the architect as demiurge.

The experiences summarized here have allowed us to guide technological teaching over the tricky passage from theory to practice on projects. Though still unsupported by the logical conclusion of architects on the construction site who have been didactically trained with these principles, they have encouraged interesting advances in training. Adapting the spirit of learning by doing (declined into learning by interacting, using, sharing), they have enabled the development of skills by demonstrating themselves fundamental for students in various didactic experiments held with other sectors and on an international level: research-project workshops, Pescara Summer School, company/alternating school-job integrated laboratories, training internships and experimental company theses.

From this point of view, the experimental experiences in Pescara, in the area of the teaching of the Technology of Architecture, though not exhaustive for local technological didactics or the still richer and more diversified training offers that have grown up in the technological sector on a national level, it is testimony we feel we should share. The teaching of technology for design, for the stated conceptual, methodological and applicative reasons has contributed to and will continue to occupy a central position in an architect’s training. This central position is related to the new training requirements coming from the working’s market that require multi/inter/trans-disciplinary skills both to harmonize the professional abilities in individuals so they can plan on several levels as well as their capacities as regards multiple scales and temporal intervention.

REFERENCES

1) The experiences shown are the results of these teaching activities: Materials and Building Elements Design, Building Systems Design, Advanced Technological Design, Laboratory of Degree titled Design and Building. The teachings are held by the author, from the 2013 to 2018, into the Degree course in Architecture of G. d’Annunzio University of Chieti-Pescara, Department of Architecture (Didactic tutors: Natalie Bruno, Alberto Cilli, Claudia Di Girolamo, Claudia Leporati, Salvatore Lucibello, Virginia Lusi, Mauri Marà, Simone Stampatori, Pier Tommaso Zechini).

Concluding thoughts – The didactic goal in architectural schools must focus on transmitting not only the pleasure of creating projects, but also on the experience aspects of doing architecture, in a synthesis among ways, means and forms to make it a solid foundation. Consequently, the technological teaching of the project must tend to an overcoming of construction details that are purely technical or specialist and take on a connective and mediation role between the various dimensions (levels, times, actors and scales) of the planning and constructive process (Giallocosta, 2006).

In the framework of the Italian University scene, recent initiatives are contributing to a fueling of doubts and worries, but in reality, they project interesting possible innovative horizons that concern the didactics of architecture both directly and transversally. To name but a few: a request to CUN by the Ministry to review the classes of degree in a more operative sense; the AVA monitoring procedure to consider how the quality of university education effects a graduate at the start of his/her work career (internship and placement); and finally, but not least, has been CNA/PPC/CUIA’s request that there be an enhancement in the character of the design/professional training of future graduates in Architecture. These are expressions of an operative framework that, going well beyond the II points of the Community Directives, underline a changed need of cognitive, strategic and operative competences to tackle the complexities of the contemporary and near future habitat that challenge the classical definition of the architect as demiurge.

The experiences summarized here have allowed us to guide technological teaching over the tricky passage from theory to practice on projects. Though still unsupported by the logical conclusion of architects on the construction site who have been didactically trained with these principles, they have encouraged interesting advances in training. Adapting the spirit of learning by doing (declined into learning by interacting, using, sharing), they have enabled the development of skills by demonstrating themselves fundamental for students in various didactic experiments held with other sectors and on an international level: research-project workshops, Pescara Summer School, company/alternating school-job integrated laboratories, training internships and experimental company theses.

From this point of view, the experimental experiences in Pescara, in the area of the teaching of the Technology of Architecture, though not exhaustive for local technological didactics or the still richer and more diversified training offers that have grown up in the technological sector on a national level, it is testimony we feel we should share. The teaching of technology for design, for the stated conceptual, methodological and applicative reasons has contributed to and will continue to occupy a central position in an architect’s training. This central position is related to the new training requirements coming from the working’s market that require multi/inter/trans-disciplinary skills both to harmonize the professional abilities in individuals so they can plan on several levels as well as their capacities as regards multiple scales and temporal intervention.

REFERENCES

1) The experiences shown are the results of these teaching activities: Materials and Building Elements Design, Building Systems Design, Advanced Technological Design, Laboratory of Degree titled Design and Building. The teachings are held by the author, from the 2013 to 2018, into the Degree course in Architecture of G. d’Annunzio University of Chieti-Pescara, Department of Architecture (Didactic tutors: Natalie Bruno, Alberto Cilli, Claudia Di Girolamo, Claudia Leporati, Salvatore Lucibello, Virginia Lusi, Mauri Marà, Simone Stampatori, Pier Tommaso Zechini).

Concluding thoughts – The didactic goal in architectural schools must focus on transmitting not only the pleasure of creating projects, but also on the experience aspects of doing architecture, in a synthesis among ways, means and forms to make it a solid foundation. Consequently, the technological teaching of the project must tend to an overcoming of construction details that are purely technical or specialist and take on a connective and mediation role between the various dimensions (levels, times, actors and scales) of the planning and constructive process (Giallocosta, 2006).

In the framework of the Italian University scene, recent initiatives are contributing to a fueling of doubts and worries, but in reality, they project interesting possible innovative horizons that concern the didactics of architecture both directly and transversally. To name but a few: a request to CUN by the Ministry to review the classes of degree in a more operative sense; the AVA monitoring procedure to consider how the quality of university education effects a graduate at the start of his/her work career (internship and placement); and finally, but not least, has been CNA/PPC/CUIA’s request that there be an enhancement in the character of the design/professional training of future graduates in Architecture. These are expressions of an operative framework that, going well beyond the II points of the Community Directives, underline a changed need of cognitive, strategic and operative competences to tackle the complexities of the contemporary and near future habitat that challenge the classical definition of the architect as demiurge.

The experiences summarized here have allowed us to guide technological teaching over the tricky passage from theory to practice on projects. Though still unsupported by the logical conclusion of architects on the construction site who have been didactically trained with these principles, they have encouraged interesting advances in training. Adapting the spirit of learning by doing (declined into learning by interacting, using, sharing), they have enabled the development of skills by demonstrating themselves fundamental for students in various didactic experiments held with other sectors and on an international level: research-project workshops, Pescara Summer School, company/alternating school-job integrated laboratories, training internships and experimental company theses.

From this point of view, the experimental experiences in Pescara, in the area of the teaching of the Technology of Architecture, though not exhaustive for local technological didactics or the still richer and more diversified training offers that have grown up in the technological sector on a national level, it is testimony we feel we should share. The teaching of technology for design, for the stated conceptual, methodological and applicative reasons has contributed to and will continue to occupy a central position in an architect’s training. This central position is related to the new training requirements coming from the working’s market that require multi/inter/trans-disciplinary skills both to harmonize the professional abilities in individuals so they can plan on several levels as well as their capacities as regards multiple scales and temporal intervention.

REFERENCES

1) The experiences shown are the results of these teaching activities: Materials and Building Elements Design, Building Systems Design, Advanced Technological Design, Laboratory of Degree titled Design and Building. The teachings are held by the author, from the 2013 to 2018, into the Degree course in Architecture of G. d’Annunzio University of Chieti-Pescara, Department of Architecture (Didactic tutors: Natalie Bruno, Alberto Cilli, Claudia Di Girolamo, Claudia Leporati, Salvatore Lucibello, Virginia Lusi, Mauri Marà, Simone Stampatori, Pier Tommaso Zechini).

Concluding thoughts – The didactic goal in architectural schools must focus on transmitting not only the pleasure of creating projects, but also on the experience aspects of doing architecture, in a synthesis among ways, means and forms to make it a solid foundation. Consequently, the technological teaching of the project must tend to an overcoming of construction details that are purely technical or specialist and take on a connective and mediation role between the various dimensions (levels, times, actors and scales) of the planning and constructive process (Giallocosta, 2006).

In the framework of the Italian University scene, recent initiatives are contributing to a fueling of doubts and worries, but in reality, they project interesting possible innovative horizons that concern the didactics of architecture both directly and transversally. To name but a few: a request to CUN by the Ministry to review the classes of degree in a more operative sense; the AVA monitoring procedure to consider how the quality of university education effects a graduate at the start of his/her work career (internship and placement); and finally, but not least, has been CNA/PPC/CUIA’s request that there be an enhancement in the character of the design/professional training of future graduates in Architecture. These are expressions of an operative framework that, going well beyond the II points of the Community Directives, underline a changed need of cognitive, strategic and operative competences to tackle the complexities of the contemporary and near future habitat that challenge the classical definition of the architect as demiurge.

The experiences summarized here have allowed us to guide technological teaching over the tricky passage from theory to practice on projects. Though still unsupported by the logical conclusion of architects on the construction site who have been didactically trained with these principles, they have encouraged interesting advances in training. Adapting the spirit of learning by doing (declined into learning by interacting, using, sharing), they have enabled the development of skills by demonstrating themselves fundamental for students in various didactic experiments held with other sectors and on an international level: research-project workshops, Pescara Summer School, company/alternating school-job integrated laboratories, training internships and experimental company theses.

From this point of view, the experimental experiences in Pescara, in the area of the teaching of the Technology of Architecture, though not exhaustive for local technological didactics or the still richer and more diversified training offers that have grown up in the technological sector on a national level, it is testimony we feel we should share. The teaching of technology for design, for the stated conceptual, methodological and applicative reasons has contributed to and will continue to occupy a central position in an architect’s training. This central position is related to the new training requirements coming from the working’s market that require multi/inter/trans-disciplinary skills both to harmonize the professional abilities in individuals so they can plan on several levels as well as their capacities as regards multiple scales and temporal intervention.

REFERENCES
Fig. 10 - Knowing how to work through interfaces: relational and intercultural inclusive interface (drawings by P. Giancane, 2017).