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Learning Theories and Higher Education

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Introduction

This paper offers a number of materials and resources which may be used as teaching aids for introduction-level courses in learning theories, especially those in higher education. The materials were developed during our participation in a postgraduate diploma module on the psychology of learning and learning theories in 2004, as part of the diploma in third-level learning and teaching at the DIT Learning and Teaching Centre.

The materials include:

- three timeline diagrams illustrating the development of learning theories which locate key thinkers and key ideas in their historic and socio-political contexts
- three summary diagrams of behaviourist, humanist and social learning theories using a honey-comb image
- power-point slides summarising the five orientations of learning: behaviourist, humanist, cognitivist, social learning and constructivist
- an introductory text to support the visuals.

Introductory Text

The visual materials presented here should be used in conjunction with the following two readings: Merriam, S.B. and Cafferella, R.S. (1999) *Learning in Adulthood: a comprehensive guide*, second edition, San Francisco, CA: Jossey-Bass (chapter 11, which includes a table/matrix illustrating the five orientations of learning);
and Gredler, M. (2005) *Learning and Instruction: theory into practice,* fifth edition, Upper Saddle River, NJ: Pearson/Merrill Prentice Hall (introductory and final chapters). The Merriam and Cafferella table/matrix is hotly contested as an accurate and useful

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representation of the field of learning theories, and is perhaps a little naïve. Nonetheless, it has a certain usefulness as an initial introduction to a complex topic.

In this paper the matrix has been augmented, and a number of significant contemporary theorists, such as Engestrom, Eraut, Boud and Illeris have been included (see Table 1). The aspect of adult education in the final section of the original matrix is elaborated here to include aspects of learning in tertiary education generally.

Table 1

Aspect	**Behaviourist**	**Cognitivist**	**Humanist**	**Social learning**	**Constructivist**
Learning theorists	Guthrie, Hull, Pavlov, Skinner, Thorndike, Tolman, Watson	Ausubel, Bruner, Gagne, Koffka, Kohler, Lewin, (Piaget)	Maslow, Rogers	Bandura, Rotter, Engestrom, Eraut, Lave and Wenger, Salomon, (Vygotsky) (Piaget) (Boud)	Candy, Dewey, Piaget, Rogoff, *vonGlaserfeld, Vygotsky,* Boud, Illeris
View of the learning process	Change in behaviour	Internal mental processes (including insight, information processing, memory, perception)	A personal act to fulfil potential	Interaction with, and observation of, others in a social context, Situated learning, communities of practice, distributed cognition,	Construction of meaning from experience
Locus of learning	Stimuli in external environment	Internal cognitive structuring	Affective and cognitive needs	Interaction of persons, behaviour and environment	Internal construction of reality by individual
Purpose of education	Produce behavioural change in desired direction	Develop capacity and skills to learn better	Become self-actualised, autonomous	Model new roles and behaviour	Construct knowledge

Using the diagrams

The theorists in the diagrams were chosen according to their perceived relevance to the domains of learning psychology and learning theories, and as representatives of the numerous theorists within each domain. Their current relevance for teaching and learning in higher education was also considered in the choice.

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The five domains of learning are colour coded in the diagrams as follows:

Red	Behaviourism
Green	Humanist
Orange	Constructivist
Purple	Cognitivist
Blue	Social learning

The timelines

The timeline in the diagrams spans the period 1850–2005 with the rationale that in the 1850s psychology emerged as a discipline independent from biology and philosophy, leading to the development of the specific field of learning psychology/learning theories.

Timeline 1 – **5 Orientations of learning** – outlines the emergence of the five orientations during the twentieth century and notes some significant historic events.

Timeline 2 – **Theories of learning** – extends the information from the first diagram and includes the names of a selected number of learning theorists from the Merriam and Cafferella (1999) table.

Timeline 3 – **Theorists** – illustrates the distribution of learning theories throughout the twentieth century, with lifespans of nineteen selected, influential theorists.

For the purpose of the presentation of the materials, the concept for the timeline is presented as a narrative – a series of interpretative panels. In placing the emerging theories within the structure of a narrative, the rationale is to support an understanding of the essential differences, complementary aspects, and overlapping features of the theories – a more dynamic representation of their relationship to each other than a static, linear image as in the Merriam and Caffarella table.

Building on the colour theme, a ‘patterned’ grid structure is introduced as a backdrop for the presentation of the theories. The pattern also acts as a metaphor (beehive) accommodating the different theories within a single framework. At the stage of writing, the visual language

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have been developed to communicate the essentials. However, the research was not sufficiently progressed to explore hybrid relationships and we concede that further development is required in this area.

Commentary on timelines

The timelines indicate the emerging trends in psychology in general and in the psychology of learning. Psychology was initially tied to philosophy and biology, until, in the mid 1800s, it became a separate discipline. Learning psychology emerged initially with the development of behaviourism by Watson with his 1913 paper 'Psychology as a behaviourist views it'. Researchers such as Thorndike and Skinner built upon these foundations. The development of behaviourism, the first domain, was brought about because psychologists were able to carry out experiments in laboratories under strict conditions and thus observe behaviour as never before. These laboratory experiments were possible due to growing culture of tolerance for such activities, reflecting the developing industrialisation of society and advances in technology.

In broad linear development terms, Behaviourism was followed by Humanism, Cognitivism, Social Learning Theory, and Constructivism. A brief explanation of each of these terms follows, with an indication of how the associated concepts impact on third-level learning and teaching.

Behaviourism

According to Jones and Elcock (2001) the beginning of the twentieth century in the USA was characterised by both a high level of industrialisation and rapid technological change. Urbanisation led to increasing migration to the cities and a restructuring of labour, resulting on the one hand in new social problems which needed to be dealt with. On the other hand, the technological change – such as electric light and telegraph – developed the idea of science as a potential benefit for society. Psychology, then could become the science society needed, and two main schools emerged: *progressivism,* aimed at social and political reform, and *functionalism*, the goals of which were to improve the adjustment of the mind to the environment. Behaviourism assumed the ambition to become an exact science and the belief that environment determines personality and behaviour. Behaviourism eventually replaced functionalism thanks to the influence of the progressive movement, which 'in attempting to

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provide a technology of social control, found it necessary to concentrate on behaviour, since social control is ultimately the control of behaviour' (Jones and Elcock , 2001, p.105)

Behaviourism originated as a social science, the goal of which was to predict and control behaviour. Learning was manifested by a change in behaviour, with an emphasis on a connection between a stimulus and a response. From a behaviourist perspective, the goal of education is to 'ensure survival of human species, societies and individuals' (Merriam and Caffarella, 1999, p.252). The main principles of behaviourism have a visible impact on third-level education, producing the appearance in the curriculum of behavioural objectives/outcomes, the importance of feedback, skills development and training, computerised and programmed instruction, competency-based education, and constructive pre-alignment of content, teaching methods and assessment.

Humanism

The concern with the 'self' is a hallmark of humanistic psychology which emerged as a protest against the scientific explanation of the person [in the 1960s and 1970s]. Scientific methods reduce the person to the status of being an 'object' for scientific enquiry. By contrast humanistic psychology reaffirmed the human qualities of the person (Tennant, 1997, p.12).

Humanism has its roots in counselling psychology & focuses its attention on how individuals acquire emotions, attitudes, values and interpersonal skills. Humanist perspectives tend to be grounded more in philosophy than in research (Ormrod, 1999, p.412).

The main proponents of humanistic psychology are Carl Rogers and Abraham Maslow. Carl Rogers was a counselling psychotherapist and believed that the model of the ideal therapist–client relationship could be applied to other domains, particularly education. In educational terms this would lead to the self-directed learner, with the teacher as the facilitator of student learning. Abraham Maslow's theory of motivation presented a hierarchy of needs – the highest of which is the need for self-actualisation – which represents the main goal of education from a humanistic point of view.

Cognitivism

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Cognitive theorists recognise that much learning involves associations established through contiguity and repetition. They also acknowledge the importance of reinforcement, although they stress its role in providing feedback about the correctness of responses over its role as a motivator. However, even while accepting such behaviourist concepts, cognitive theorist view learning as involving the acquisition or reorganisation of the cognitive structures through which humans process and store information (Good and Brophy, 1990, p.187).

In the 1800s psychology emerged as a sub-discipline of philosophy. Wilhelm Wundt believed in the method of introspection, the self-reporting of one's own mental states. He established the first psychological laboratory in Leipzig in 1879 to study conscious experience. Using trained individuals he would get them to describe all the sensations they felt in relation to a stimulus. He trained many psychologists one of whom was Edward Titchner. Titchner tried to discover laws of thought combination, which he called *structuralism*. They both believed in *Reductionism*, which could break down consciousness into basic elements. William James disagreed with Reductionism and proposed Functionalism instead. He viewed consciousness as something that changed continuously and could not be reduced to elements. He was interested in the function that consciousness serves.

Gestalt psychology came to prominence in Germany about 1910 when there was social turmoil in Europe. Gestalt was essentially the study of perceptions and sensations, and a holistic approach to consciousness, rather than just considering one point of interest. By the 1930s the Gestaltists had moved to the USA to avoid persecution.

The views of all these psychologists differed, but they all believed that consciousness should be the focus of study. Consciousness is essentially very difficult to study because of its subjective nature, and this fact allowed behaviourism to become the focus of psychology and the practice of psychology to prefer behaviour that could be studied under scientific conditions.

The term 'Behaviourism' was formulated by Watson's 1913 paper "Psychology as a behaviourist views it". Two classical aspecets of behaviourism which emerged were *classical conditioning* (Pavlov) and *instrumental conditioning* (B.F. Skinner).

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Eventually behaviourism began to falter because aspects of learning such as memory, language and other mental abilities could not be considered within its core logic. As an illustration, Noam Chomsky's review of Skinner's ideas on verbal behaviour is regarded as one of the turning points of the rise of counter-behaviourist, cognitive psychology. Chomsky pointed out that creativity in language could not be accounted for by behaviourist theories, and maintained that people have an innate ability to learn languages.

World War II also brought about a shift away from behaviourism, when human performance and propaganda were given a great deal of critical attention by academics. Additionally, the growth in technology, especially computers and electronics, brought a new focus on mental processes for psychologists. Languages were also the focus of studies about communication structures and socially situated learning..

Cognitivism

The rise of cognitivist psychology has had a profound effect on education. For third-level education it meant a shift away from teacher-centred methods of course delivery and more freedom for students to choose the type of learning the suits them best. Curriculum design became more flexible with ideas of continuous assessment, group-based learning and applied practice being integrated into the learning experience. The emphasis moved from reproduction of learning to meta-cognition.

Other areas where cognitivism has had an impact on education include attention theories, memory techniques (short and long term), mental imagery, language acquisition, problem solving, and decision making.

Social Learning

Merriam and Caffarella (1999) classify social learning theory as a theory on a par with constructivism, humanism, behaviourism, and cognitivism. However, many other writers do not. Tennant (1997) points out that social learning theory encompasses a diverse range of theories and approaches. He calls this theory the 'social environment' perspective. Two opprosing perspectives have emerged, centred on the active or passive involvement of the learner in the learning process.

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First, the person can be seen as a passive receiver of behaviour, roles, attitudes, and values which are shaped and maintained by the social environment. Skinner's stimulus-response psychology is the most influential of these behaviourist approaches (Tennant, 1997). Its impact on third-level education is evident in the setting of behavioural objectives and the provision of regular feedback and reinforcement to students (Stapleton, 2001).

The second approach provides for an active role for the person. This approach is essentially humanistic. It sees the process as a dialectical one whereby the person and social environment are both active in the process. This approach can be demonstrated by the writings of Freire who looked at social processes as they shape individual identity. He stressed the need for adult learners to resist forms of enculturation which are alienating and oppressive (Tennant, 1997).

Jarvis (2003) also sees the relationship between the individual and society as one involving interaction and mutual influence. Mead, one of the most influential social psychologists, sees learning as social in the sense that mind and self are themselves socially constructed (Jarvis *et al.*, 2003). Bandura stressed that individuals are capable of self-regulation and self-direction. He regards learning as involving a reciprocal determinism between interdependent individuals and environmental influences (Jarvis *et al.*, 2003). This approach impacts on third-level learning in the spheres of lifelong learning, informal learning, experiential learning and collaborative learning.

Constructivism

While the thinking that informs Constructivism spans the twentieth century (theorists including Dewey, Piaget, Vygotsky, Candy, Driver, Merizow, and Boud) it was not until the later part of the century that this theory became mainstreamed through practice. In the Constructivist model, learning is viewed as a process of making meaning. The learner interacts with experience and environment in the construction of knowledge. The process is essentially learner-centred. However, while the Constructivist theory encompasses a number of inter-related perspectives, theorists 'differ as to the nature of reality, the role of experience, what knowledge is of interest, and whether the process of meaning making is primarily individual or social' (Merriam and Caffarella, 1999, p.261).

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In addressing the pedagogical needs of both the individual and the social in the constructivist model, the implications for third-level students are numerous. They include learning to learn, experiential learning, shared and negotiated learning, social contextualisation of learning, self-directed learning, group work, creative problem solving, guided discovery, and reflective practices.

Future trends

There are many changes occurring in the twenty-first century which will influence the nature of learning and learning styles being adopted. Perhaps the most significant change is that universities are now increasingly competing with a range of non-traditional education providers. This will force higher education into a pro-active stance in understanding how students learn best, and how teaching impacts on learning. Additional contemporary changes include globalisation, modularisation, mobility of learners, distance education/e-learning/flexible learning, lifelong learning, mass education, and work-based learning.

'The de-institutionalisation of education, in the form of open and independent learning systems, is creating a need for learners to develop appropriate skills' (Knowles, 1975, p.14). The impact here on learners is the gradual move away from the more traditional forms of teaching and learning, where information was transmitted to the student through physical interaction between teacher and student, to more self-directed, student-centred approaches. Problem-based learning is an example of one approach to learning where the learner needs to take responsibility for his or her own learning, with the teacher now increasingly assuming the role of facilitator of student learning.

The impact of technology and the internet will continue to increase, having economic and social implications for society. For instance people can now work from home if they have immediate access to a computer. This may facilitate the increase of distance-learning courses as students no longer have to attend a physical campus to gain qualifications. Increasing modularisation enables many students to learn at their own pace, in their own time.

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Final remarks

We have illustrated the main theories of learning which have developed over the last century, and the social, technological and historical contexts within which they emerged. Each theory has its own merits, but perhaps it would be more advantageous for educators of the future to take a more eclectic approach where learning theory is concerned, as more than one theory could accommodate the needs of the self-directed, experiential and lifelong learners of the future.

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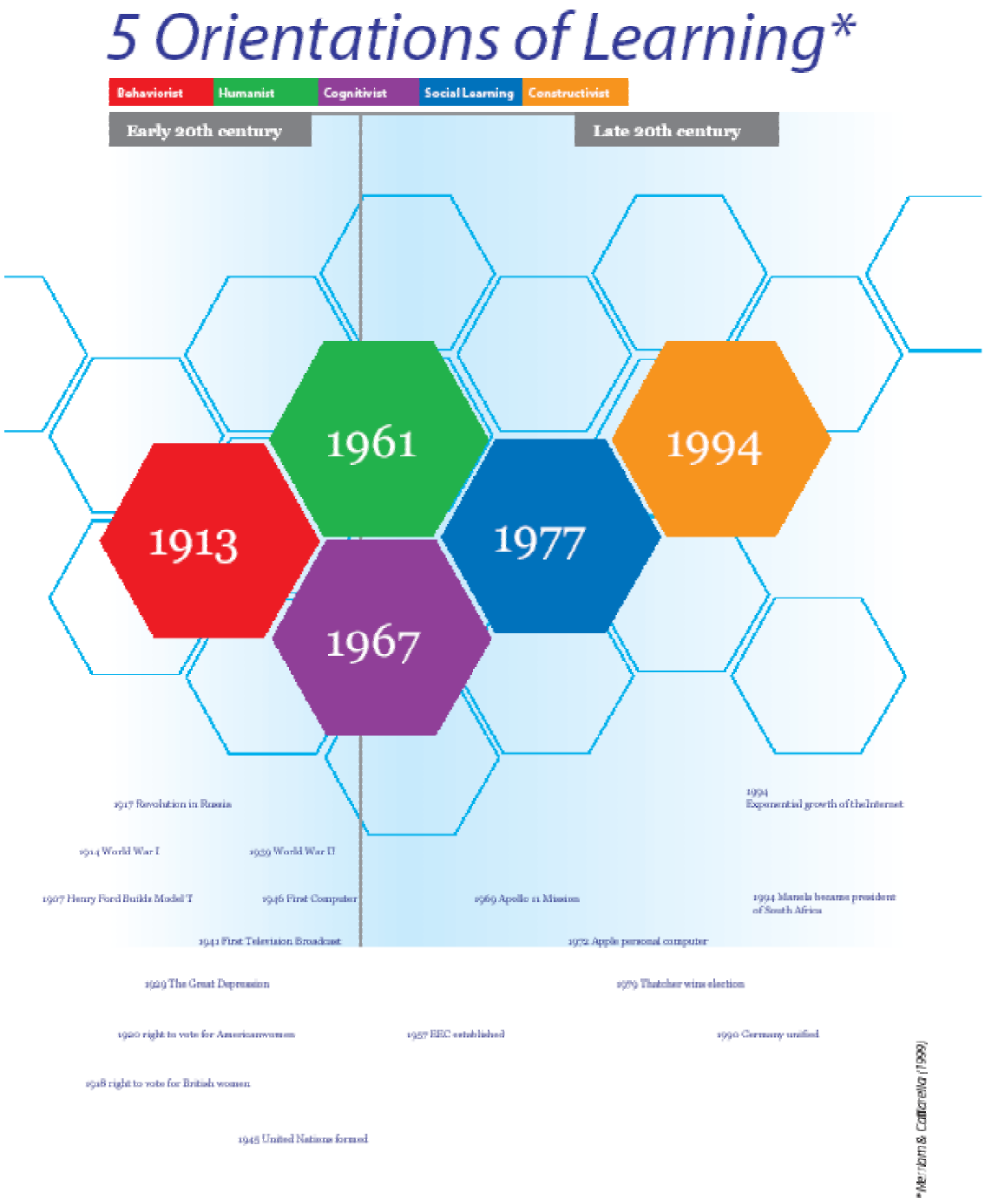
Timeline 1



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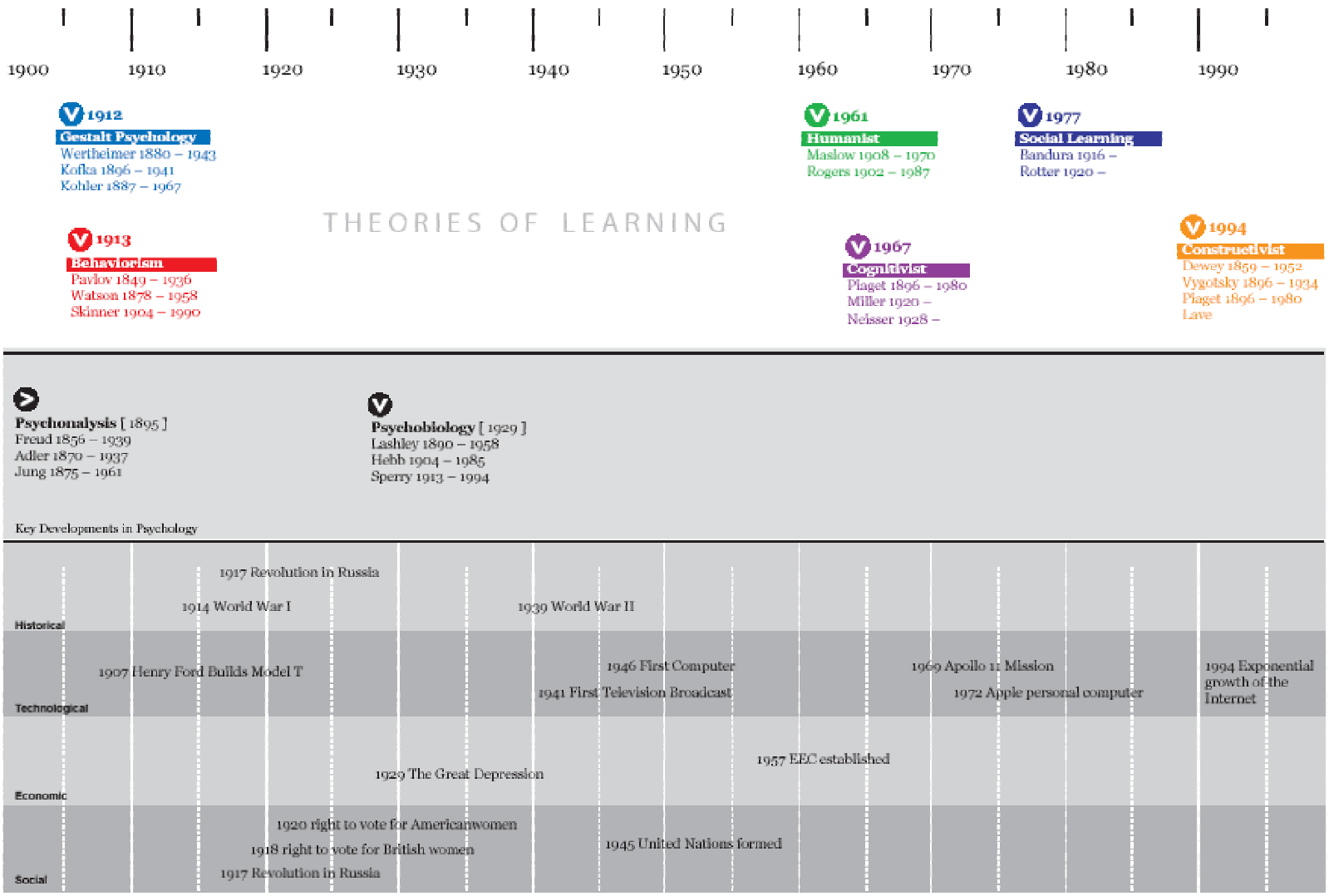
Timeline 2



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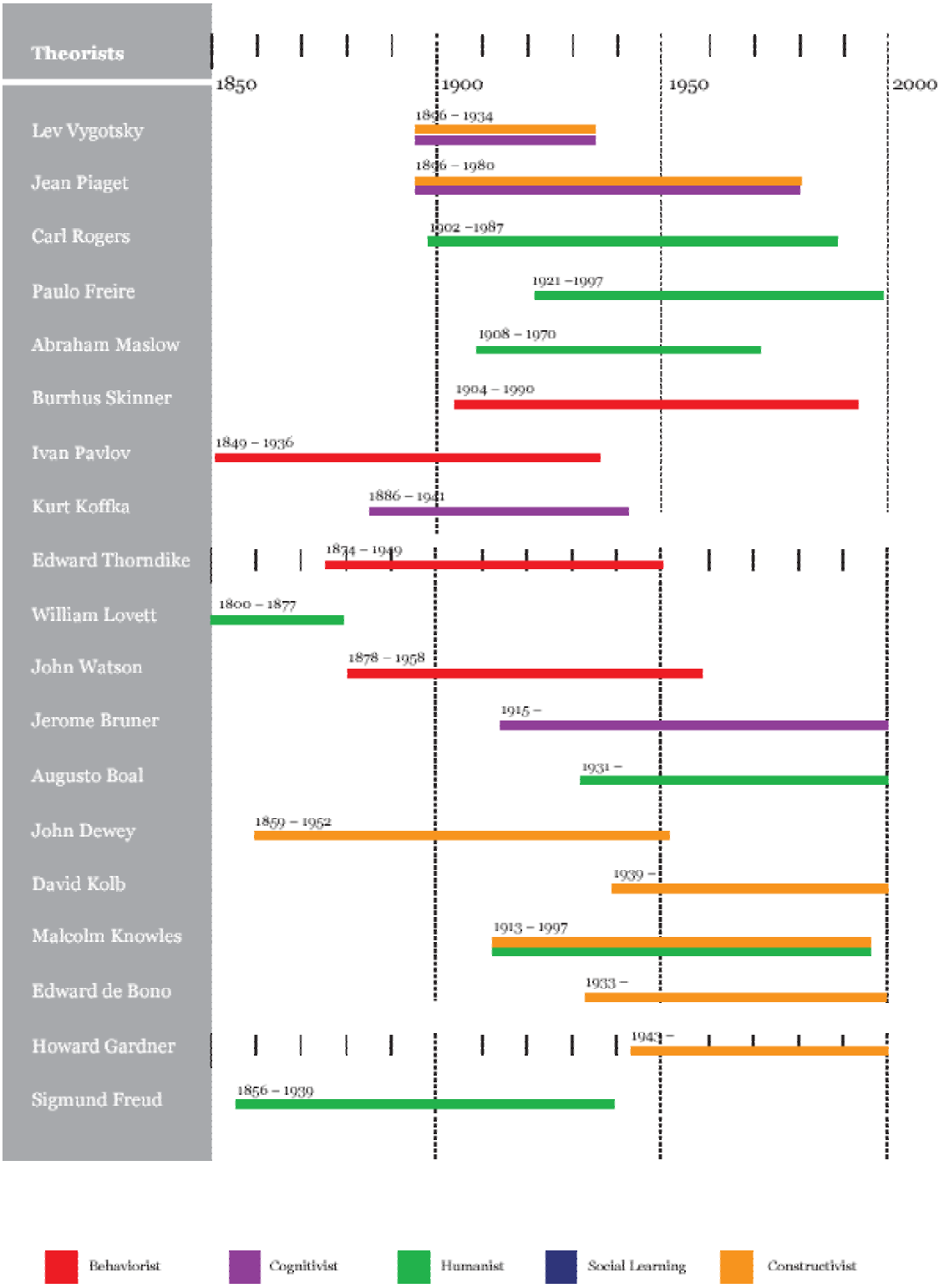
Timeline 3



Behaviorist Cognitivist Humanist Social Learning Constructivist

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behaviorist theory

Key Theorists

Pavlov 1849 – 1936

Skinner 1904 – 1990

Watson 1878 – 1958

What is Learning?

'Learning is manifested by a change in behaviour' (Merriam & Cafarella, 1999: 251).

'The type of learning which attracted behaviourists was the acquisition of stereotyped responses [...] and the acquisition of observable and quantifiable skills and knowledge' (Tennant 1997: 94)

Four key principles according to James Hartley (1998): (http://www.infed.org/biblio/learning-behaviorist.htm)

1. Activity is important.
2. Repetition, generalisation and discrimination are important notions.
3. Reinforcement is the cardinal motivator.
4. Learning is helped when objectives are clear.

Connectionism: the learning process takes place through the connection of stimuli and response (S-R).

Importance of contiguity and reinforcement.

Goal of Education

To produce behavioural change that will ensure survival of human species, societies and individuals. (Merriam & Cafarella, 1999: 252).

Main Principles

- Behavioural objectives (which would demonstrate the students' understanding).
- Competency-based education.
- Skill development and training.
- Importance of feedback.
- Active and experiential learning (learning by doing).
- 'Deterministic' problem solving.
- Student is not responsible for his/her learning; environment is.
- Computerised and programmed instruction.
- Teacher facilitates environment, stimuli and reinforcement.

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humanist theory

What is Learning?

Aim of humanistic educational strategies is to lead out the potential of the student to assist them in their quest for self-actualisation.
(Stapleton 2001)

The major characteristics of human nature according to Rogers (1951) adapted from Lefrancois (1997) p. 243

1 Reality is phenomenological
2 Behaviour is motivated by the need to self-actualise.
3 Behaviour occurs within the context of personal realities.
4 The self is constructed by the individual.
5 Our behaviours conform with our notions of self.

Goal of Education

The concern with the 'self' is a hallmark of humanistic psychology which emerged as a protest against the scientific explanation of the person. Scientific methods reduce the person to the status of being an 'object' for scientific enquiry. By contrast, humanistic psychology reaffirmed the human qualities of the person – such as personal freedom, choice and the validity of subjective experience.
(Tennant 1997: 12))

Main Principles

- Experiential learning
- Student centred approach
- Teachers as facilitators of student learning
- Focus on the process of learning rather than the acquisition of facts.
- Problem solving
- Education system should fit the student (Stapleton, 2001)
- Holistic education

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social learning theory

What is Learning?

Learning is interaction with and observation of others in a social context / interaction between person and society/environment. Theorists may view the learner as not being in control in this relationship (behaviourist) or as active (humanist).

Goal of Education

The purpose of education is to model new roles and behaviour / to teach people how to act in a social context.

Main Principles

- Socialization
- Social roles
- Mentoring
- Group work and team work
- Collaborative learning
- Experiential learning
- Informal learning
- Lifelong learning
- Any theory of andragogy must take account of the relationship between the person and society.
- Adult education is often seen as a vehicle for addressing social issues

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